### TITANINE DOPE



OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 1059. (No. 15. Vol. XXI.)

Registered at the General Post Office as a Newspaper.

APRIL 11, 1929.

SIXPENCE WEEKLY.

### "SINTONA" AEROPLANE LINEN FABRICS to BRITISH and FOREIGN SPECIFICATIONS.

Manufacturers: THOS. SINTON & Co., Ltd., Tandragee, Co. Armagh, N. Ireland.

Selling Agents: J. W. GATES & Co., 133, Oxford Street, London, W.1.

Telegrams: Gates, London, Regent 1164.

Telephone: Regent 1164.

Major Segrave KŁG

Sparking Plugs

### MALLITE PLYWOOD

Telephone 1 BISHOPSGATE 5641 (4 lines). USED BY THE LEADING AIRCRAFT MANUFACTURERS

THROUGHOUT THE WORLD.

Telegrams: VICPLY KINLAND LONDON;

Manufactured to the BRITISH AIR MINISTRY SPECIFICATION, 2.V.3., by

THE AERONAUTICAL & PANEL PLYWOOD CO., LTD., 218-226, KINGSLAND ROAD, LONDON, E.2.

PALMER Landing Wheels and Tyres

Designed for—

mot adapted to—

Aeroplanes.



### STRIP STEEL

Specialists in the Rolling and Heat Treatment of Aircraft Strip and Sheet Steel.

TO AIRBOARD SPECIFICATIONS.

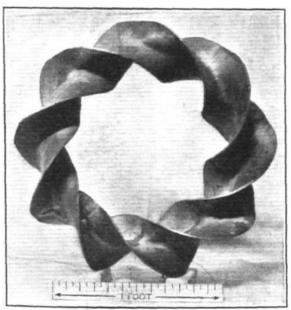
Deep Drawing Steel for all kinds of Presswork.

J. J. HABERSHON & SONS, Ltd., HOLMES MILLS, ROTHERHAM.

'Phone: ROTHERHAM 569 (4 lines). T. A.: "HABERSHON SONS, ROTHERHAM."

"Alpax" (MODIFIED ALUMINIUM SILICON ALLOY)

Castings.



AN "ALPAX" DIE CAST AERO ENGINE INDUCTION SCROLL.

Lightalloys Ltd., ST. LEONARDS RD., LONDON, N.W.10.

### EQUIPMENT FOR THE

#### AIRCRAFT CONSTRUCTOR

Complete Stocks of Aircraft and Aerodrome Equipment Accessories at the disposal of Constructors.

Including: Aero Fabric to Spec. 4-F1 A.G.S., 167 Taper Pins, Aluminium Pitot Tubing, T.A.G.S. Electrical Fittings, Turnbuckles, Fork Ends, Bolts, Nuts, etc.

Our approved inspection stamp on Bolt or Nut is Guarantee of accuracy to dimensions and comformity to specification.

### Brown Brothers

THOMSON AND BROWN BROTHERS LTD.
BROWN BROTHERS (IRELAND) LTD.

GREAT EASTERN STREET, LONDON, E.C.2.



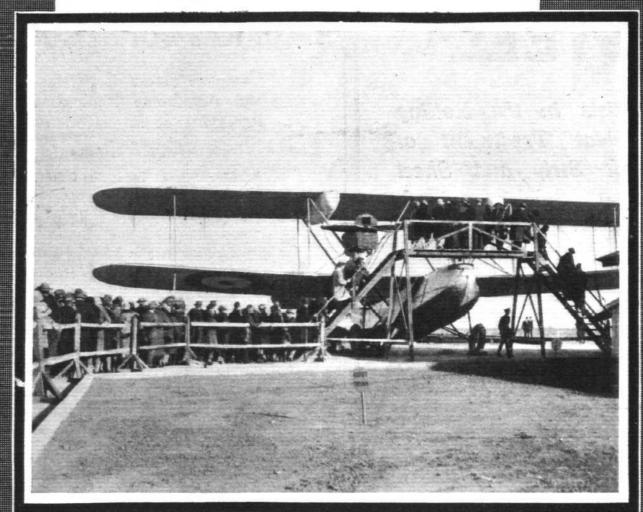
WE made thousands of Aeroplane Radiators of all types for the Army and Navy during the war. Under control of the Air Ministry we were known as the National Aircraft Radiator Factory. We have an extensive and up-to-date plant for drawing Aeroplane Tubes of any length or design, and our experience of Radiator

manufacturing covers a period of seventeen years, SERCK RADIATORS, LTD., Warwick Rd., Greet, Birmingham,

Warwick Rd., Greet, Birmingham. Telephone: - Victoria 531. Telegrams: - "Serckrad, Birmingham." BRASS & COPPER TUBES

E can supply Brass and Copper Tubes of every design in quantities, guaranteed perfect in every respect.

### DOPED WITH



# CELLOR

#### The dope of proved efficiency

Enormous interest was shown by the Australian public in the Far East Flight. The illustration shows some of the 8,000 visitors inspecting one of the Supermarine Metal Constructed "Southampton" Flying Boats at close quarters.

Cellon Dope was used on the four "Southamptons" engaged on this Flight—with the usual most satisfactory results.

Cerric Cellulose Lacquers comply with D. T. D. Specification 63. Write for particulars.

CELLON, LTD., Upper Ham Road, KINGSTON-ON-THAMES.

Telephone : Kingston 6061 (4 lines).

Telegrams:
AJAWB, Phone, Kingston-on-Thames.



D.8.



First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Lecemotion and Transport
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1059. (No. 15. Vol. XXI.)

APRIL 11, 1929

Weekly, Price 6d. Post free, 7d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2
Telephone: Holborn 3211. Telegrams: Truditur, Westcent, London.
Annual Subscription Rates, Post Free.

United Kingdom .. 30s. 4d. Abroad .. .. 33s. 0d.\*

\* Foreign subscriptions must be remitted in British currency.

#### CONTENTS

Editorial Comment:								PAGI
Towards Safety								289
Appreciation	**	**	**	* *	79.9			290
Demonstrating the Ha	indley .	4.4				291		
The Armstrong-Siddel	* *	***			293			
Royal Aero Club Office	ial Not	ices		* *	* *			297
Airisms From the Fou	r Wind	5	20.00		2727	900	* *	299
Fairey Fox (Rolls-Ro	yce)	4.2			0414			300
Fairey III F (Napier)		**	* *			***	**	301
Private Flying: Some	e Recer	at Priva	ate Tot	ırs	ā)(a)	990	2.2	302
Light 'Plane Clubs	* *	* 4			500	7.7	5.5	304
The Handling and Mo	oring o	of Airsh	ips		6.6	**	* *	305
Spartan Progress	(2.5)		* *		2.4		* *	306
Royal Air Force	100	0.00	* *	9.90	806	* *		307
In Parliament		**	2.2	2023	2.2			307
Air Ministry Notices	0000	0.04		* * *		* *	900	307
Personals	4.4			150	400		212	307
Air Post Stamps	2505	10.0			***	**		308

#### DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

April 11 .... Lecture, "Wind Tunnel Methods of the Eiffel Laboratory," by M. Lapresle, before R.Ae.S. and Inst.Ae.E.

April 18 .... Lecture, "R.101," by Col. V. C. Richmond, before R.Ae.S. and Inst.Ae.E.

April 19 .... A.I.D. Technical Staff Association Dinner, Hotel Russell.

April 20 .... 28 Sq. (R.A.F.) Old Boys' Association Re-union.

April .... Exhibition of Sporting and Touring Aircraft,
Switzerland.

May 20 .... Northampton Air Pageant.

June 19-22 F.I.A. Conference, Copenhagen.

June 27-30 Rotterdam International Air Meeting.

July 5-6 .... King's Cup Race. July 13 .... R.A.F. Display at Hendo

July 18 .... R.A.F. Display at Hendon.
July 16-27.... 7th International Aero Exhibition, Olympia.
July 25 .... Bleriot Cross-Channel Flight Anniversary Fete,

Calais.
July 28 .... International Flying Meeting, Sweden.
Aug. 1-14 .... French Light Plane Meeting, Orly.

Aug. 15 .... International Balloon Race, Poland. Sept. 6-7 .... Schneider Trophy Race, Solent. Sept. 10-20 Aero Club de France Meeting, Le Baule.

Oct. 1 .... Gordon-Bennett Balloon Race, St. Louis, U.S.A.

Oct. 31 .... Guggenheim Safe-Aircraft Competition Closes.

#### EDITORIAL COMMENT



ARELY have we witnessed a more convincing demonstration than that which took place at Cricklewood last Monday, and to which reference is made elsewhere in this issue. After having seen it in operation, one cannot doubt for a moment the effectiveness of the new "interceptor" addition to the

Handley Page automatic wing-tip slot. Most of FLIGHT's readers will know that the automatic wing-tip slot prevents the air from breaking away from the wing surface at the wing tips when the rest of the

Towards Safety wing is stalled. It thus renders the aircraft laterally stable in the stalled condition. Before the advent of the automatic slot a good deal of experimenting was done with slots interconnected with the ailerons, and it was found that very powerful lateral control could be obtained with this combination. But it lacked the stability which the automatic slot gives. The "interceptor" does not interfere in the slightest with the advantages obtained from the automatic slots, but when called into action (being connected to the ailerons and thus under the control of the pilot) it does provide very powerful lateral control. What the "interceptor" actually does is to spoil the lift of the wing tip by causing the air to break away from

the wing surface, thereby stalling it.

It might be argued that this is a somewhat roundabout way to set about it. First, one goes to a lot of trouble to provide a slot which shall give high lift when the rest of the wing is stalled, and then one adds a "gadget" in order to spoil that lift. Actually there is a very good reason for doing it in this way. The same results could doubtless be achieved by providing means for operating the auxiliary aerofoil on the wing tip whose lift one desired to reduce, but the air forces on the small aerofoil are of considerable magnitude and would be more difficult to overcome, with the result that the operation of the control might easily become stiff and jerky. The "interceptor," on the other hand, can be made of a variety of forms, neither of which need require more than a very insignificant load on the control stick. In the " Moth with which the demonstration was made on Monday

last, the "interceptor" was in the form of a narrow hinged flap normally lying snugly against the upper surface of the wing behind the slot. As the aileron was raised to a certain point this flap was raised at an angle, and thus deflected the air. In wings of deeper section the "interceptor" could be in the form of a vertical strip, normally being housed inside the wing, but raised for control above the surface. It is unlikely that the actual form of the "interceptor" is important. Almost any shape of obstruction will probably cause the air to break away.

Mr. Cordes, one of Handley Page's test pilots, stalled the "Moth" and then rolled it from side to side, the angle of the wings at times being a good deal more than 45°, probably 60° or so. The machine remained in the stalled condition all the time, but the lateral control was, obviously, extremely powerful.

In view of the fact that there is no denying the number of accidents which occur every year due to stalling and spinning into the ground, the sum of £100,000 which the Air Ministry has decided to pay the Handley Page company for the slot rights cannot be said to be excessive. If the slot reduces the number of fatal accidents by 20 a year we shall have saved a number of valuable lives, not to speak of the monetary values which will be saved, and at a price to the nation which none could possibly grudge.

At the moment we are not quite clear whether there is any objection to the fitting of slots and "interceptors" on certain types of aircraft. The spin, we believe, is no longer held to be a necessary war-time manœuvre as regards air fighting. Whether the roll is so regarded, and whether the slots prevent a machine from making a slow roll, we do not know. Theoretically they should not do so if the roll is carried out in the unstalled condition. And the "interceptor" presumably spoils the lift of the

wing tip whether the slot in front of it is open or closed. So that in a roll the "interceptor" should help rather than hinder the manœuvre.

On civil aircraft there can, we think, be no question that the automatic slots and "interceptor" should be standard fittings. The slots will not prevent damage to a machine stalled into the ground in a horizontal attitude, but they should materially reduce the penalty which a pilot pays for making a mistake when close to the ground. But it does seem that undercarriages capable of absorbing much greater shocks than at present should accompany the fitting of slots.

· · ·

The news that the French Government has placed an order with Short Brothers for one of the "Calcutta" flying-boats with "Jupiter" engines will be received with general satisfaction. Whatever Appreciation may have been the case in other types of aircraft, British flying-boats are ahead of anything produced in any other country. This is a result of our policy to develop real seagoing and seaworthy types capable of operating over long distances without a shore base. France on the other hand, has followed a different policy, and as a result has not had as much experience as we of this type of aircraft. We personally think that M. Laurent Eynac is to be congratulated on his courage in ordering a British flying-boat, for a good deal of courage it must have required. The fact that the "Calcutta" is of all-Duralumin construction should also be a point in its favour as far as France is concerned, for Duralumin is the chief constructional material used by French constructors. It is presumed that later on the "Calcutta" may be built in France under licence by one of the French firms.



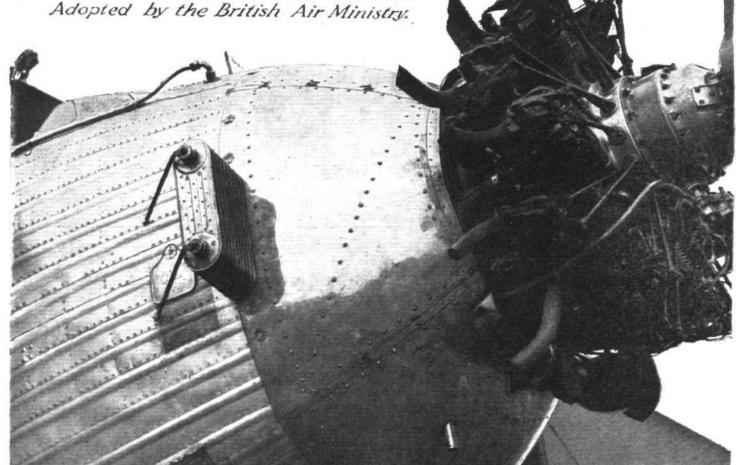
["FLIGHT" Photograph

MORE APPRECIATION: The French Government has recently placed with Short Brothers, of Rochester, an order for a "Calcutta" flying-boat with "Jupiter" engines, similar to those used on the Mediterranean section of the England-India air route.

# VICKERS-POTTS OIL COOLER

[ENGLISH PATENT Nº 285524]

FOR THE EFFICIENT COOLING OF LUBRICATING OIL IN AERO ENGINES.



Available in all capacities to suit air-cooled or water-cooled engines of any horse-power.

The VICKERS-POTTS OIL COOLER has a lower aero-dynamic resistance for cooling capacity provided than any other apparatus of similar purpose.

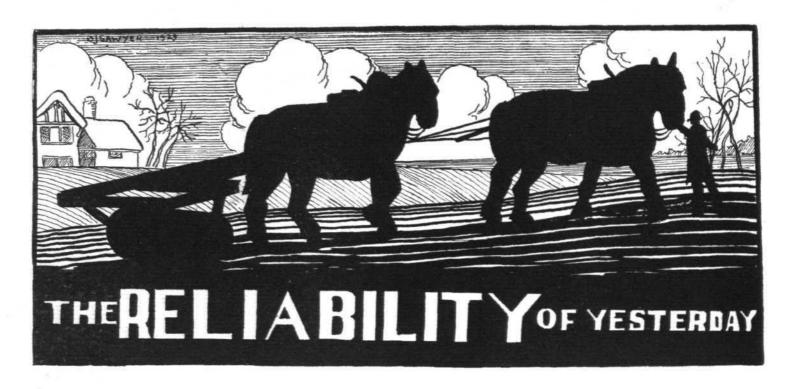
> The illustration shows a Vickers-Potts Oil Cooler mounted on an Armstrong-Siddeley "Jaguar" installation.

### VICKERS [AVIATION] LIMITE

WEYBRIDGE,

BROADWAY, LONDON, S.W.I.

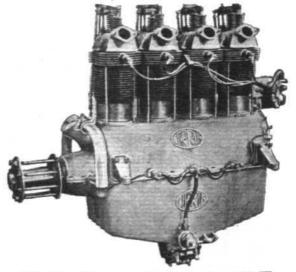
VICKERS, SOWEST. LONDON.



The reputation of "CIRRUS" engines rests not upon words but upon actual air achievements, of which the following are some examples:—

ENGLAND — AUSTRALIA (in 15½ days). ENGLAND-AUSTRALIA (with passenger). LONDON - SOUTH AFRICA - LONDON. LONDON-INDIA (2 machines). LONDON - CAPETOWN (in 13 days). CIRCUIT OF THE AFRICAN CONTINENT. KING'S RACE, CUP AIR 1926. AIR RACE, 1927. BRITANNIA 1927. TROPHY, SIDDELEY TROPHY, 1928.





OF TO-DAY

CIRRUS AERO ENGINES, LTD.

REGENT HOUSE,

89, KINGSWAY, LONDON, W.C.2.

Telegrams
"OCIRRUSO
LONDON."

#### SLOT AND INTERCEPTOR CONTROL

A Convincing Demonstration
of the latest Handley Page Development
at Cricklewood



THE Handley Page automatic slot, which has already been fitted to large numbers of service and civil aircraft, gives, as readers of FLIGHT will know, lateral stability when the aircraft is in the stalled condition. Thus the incipient spin is avoided, and when stalled the machine sinks on a more or less even keel. The ailcrons are operative in this condition, but the lateral control is not always as powerful



THE HANDLEY PAGE SLOT AND INTERCEPTOR CONTROL: Mr. Cordes demonstrates the effectiveness of this control on a De Havilland "Moth" fitted with "Cirrus II" engine.

as might be desired. By adding the "interceptor" the lateral control is rendered extremely powerful, and even in the stalled condition the aircraft is under as perfect lateral control as is the case in normal unstalled flight. The "interceptor" is a very simple addition to the Handley Page automatic slots, and may consist in a narrow hinged "lid" situated just behind the slot. It may also take the form of a narrow vertical strip which normally lies housed in the wing section, but which can be raised above the surface where it deflects the air and causes it to break away from the wing, thus causing the wing to stall.

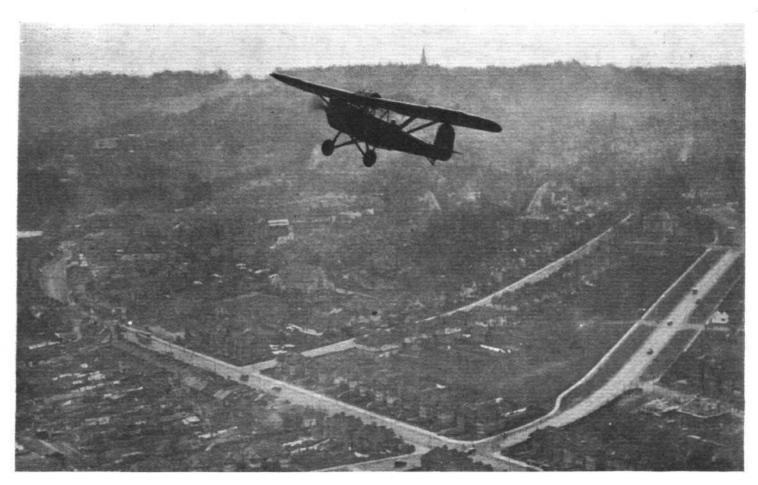
On April 8 a demonstration of the slot and interceptor control was given at Cricklewood, Mr. Cordes, Handley Page's test pilot, flying a De Havilland "Moth" fitted with the new arrangement. After going up to a height of a few hundred feet, Mr. Cordes put the nose of the machine up at an alarming angle, and then proceeded to operate the lateral controls, first standing the machine on its right wing tips and then on its left. Sinking all the while, the "Moth" was obviously under perfect—and very powerful—control, in spite of the fact that its nose was held up and the actual angle of attack well above the stalling angle.

Previously, Sqdn.-Ldr. England had flown a Handley Page "Hinaidi" night bomber (Bristol "Jupiter") fitted with automatic wing tip slots, but not with the "interceptor." His flat turns revealed the lateral stability of the machine, which showed not the slightest sign of any tendency to spin. Later, the machine was flown first with one and then with the other engine throttled right down, and turns were made repeatedly against the pull of the working engine. Although the day was calm, and almost without any wind at all, the "Hinaidi" appeared often to be "sitting still" in the air, merely sinking slowly.

The demonstration was concluded by Mr. E. A. Jones, of the Brooklands School of Flying, taking up the Westland "Widgeon-Gipsy" belonging to the Anglo-American Oil Co., and giving a demonstration of stability when stalled, as well as a stalled landing. The machine was fitted with automatic slots, but not with the interceptor. The demonstrations were witnessed by a number of foreign Air Attachés, press representatives, and others interested in flying.

representatives, and others interested in flying.

At a subsequent lunch at Golders Green, Mr. Handley Page explained that his company had settled with the Air Ministry



["FLIGHT" Photograph

"STALLED BUT STABLE": A Westland "Widgeon," with "Gipsy" engine, in stalled flight above Crickle-wood, piloted by Mr. E. A. Jones. This particular "Widgeon" is the property of the Anglo-American Oil Co., and is fitted with Handley Page automatic slots.

in the matter of Government payment for the use of the slot on service aircraft, and that it had been agreed to accept the sum of £100,000 which would give the Air Ministry the right to fit the present devices covered by Handley Page Patents, and any future developments thereof, on any desired number of service aircraft. In coming to this agreement, the Air Ministry recognised the validity of the Patents, and

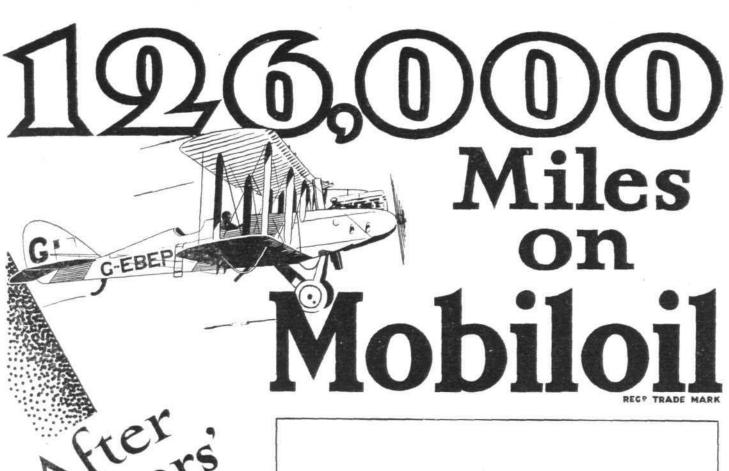
undertook that neither the Air Ministry nor any other Government department would challenge this validity.

Finally, Mr. Handley Page divulged the fact that a substantial order has been placed with his firm for a fleet of new aircraft, which will have four engines, carry 40 passengers in two saloons, and a crew consisting of pilot, navigator and steward.



[" FLIGHT " Photograph

HOSTS AND VISITORS AT SLOT AND INTERCEPTOR DEMONSTRATION: From left to right: Mr. Savage, Capt. Cordes, and Sqdn.-Ldr. England, of the Handley Page Co., Lieut. Monti, Mr. Handley Page, Mr. Worley (chairman of H. P. Ltd.), General Verduzio, Lieut.-Col. Don S. A. Casares, Lieut. de Vaisseau Sala, Sqdn,-Ldr. Kubita, Lieut.-Comdr. Falconakis and Comdr. Roussos,



SURREY FLYING SERVICES

A. P. MUIR)

Telegrams:

CROYDON AERODROME - SURREY

" Aviation,

1736 Croydon.

Phone.

Croydon."

AIRCRAFT CONSTRUCTORS. AIR TAXIS AND PLEASURE . FLIGHTS. .

AVIATION DEPT

FWG/RDP.

26-3-29

Messrs. The Vacuum Oil Co., Ltd., Caxton House, Westminster, S.W. 1.

Dear Sirs,

For the attention of Mr. A. Lawson.

It may interest you to know that our D.H.9, with Siddeley Puma engine has in the last four years flown 126,000 miles. We wish to express our satisfaction with your Mobiloil "BB" which has been in continual use, and with which we have found there has been exceptional freedom from carbon formation and sludging. Top overhauls of the engine averaged about 200 hours, and complete overhauls at 400 hours, at which periods we have found no dirt and only the slightest wear. Your excellent service in other countries has been of great help to us.

Your products are also used exclusively on our school machines with equal satisfaction.

Yours faithfully, for SURREY FLYING SERVICES.

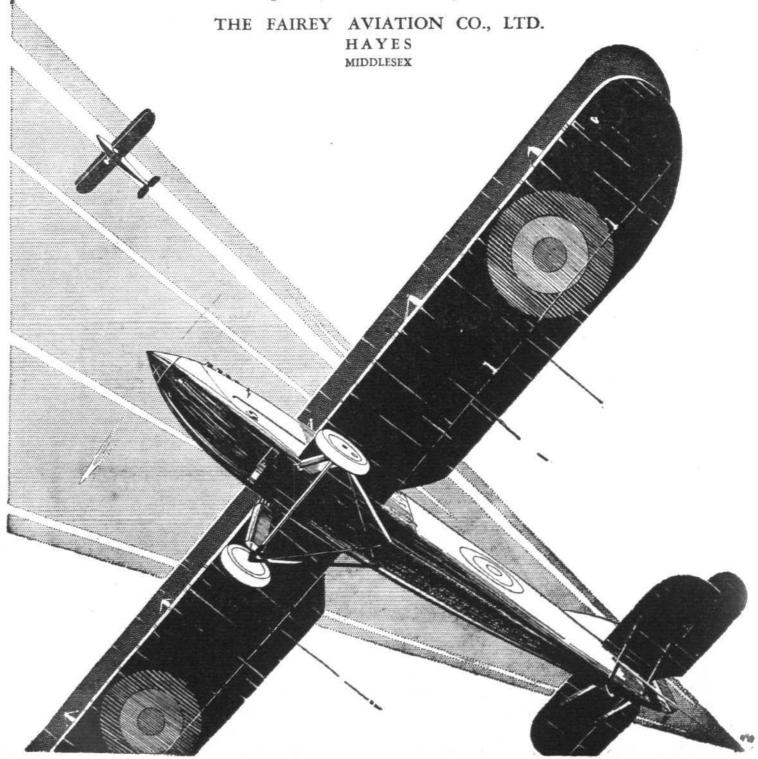
the Quality oil for safety in the air THE VACUUM OIL COMPANY, LTD.,

CAXTON HOUSE, S.W.1.

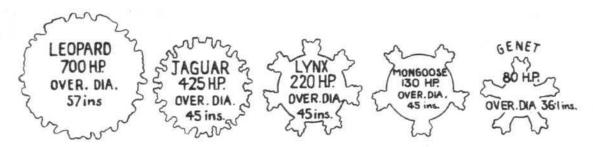
## FAIREY

### AIRCRAFT

The predominance of outstanding and unsurpassed characteristics has placed Fairey Aircraft in the position they hold to-day—the very forefront of modern production aircraft. In the case of the Fairey III.F type for instance, its leading features combine the highest efficiency and reliability with the utmost adaptability both in equipment and accommodation for many different types of engines. That these qualities are appreciated is shown by the many Air Forces throughout the world that are using Fairey Aircraft at the present time.



Kindly mention "Flight" when corresponding with advertisers.



#### THE ARMSTRONG SIDDELEY AERO ENGINES

A SERIES of aero engines ranging in power from 80 b.h.p. to 700 b.h.p. is now in production at the Coventry works of Armstrong Siddeley Motors, Ltd. Nominally, this series of powers comprises five distinct types of engine: The "Leopard," the "Jaguar," the "Lynx," the "Mongoose" and the "Genet." Actually, the choice is even wider than this list would indicate, partly because there is more than one sub-type of each of several of these engines, and partly as a result of the fact that some of the types—quite a large proportion, in fact—are also produced as geared engines, while others are fitted with superchargers. Finally, the geared and supercharged features have been successfully combined in at least one type, so that taking it all round, it will be seen that a series of engines of quite amazing range and characteristics is now available from this one firm. In fact, we doubt whether any other aero engine firm in the world has such a comprehensive range of engines to offer.

For the benefit of our foreign readers it may be well to recall that the name Siddeley, already a pioneer name in the British automobile industry, first became generally known in connection with aero engines through the production, during the war, of the Siddeley "Puma" water-cooled six-cylinder in-line engine, a power plant which established a reputation for simplicity and reliability. The good old "Puma" is now becoming somewhat scarce, and has not been produced at Coventry for a large number of years, but the new types of engine bearing Mr. Siddeley's name are upholding the reputation and traditions of the firm.

Shortly after the end of the war, Mr. Siddeley, always a far-seeing man, became convinced that for air work the radial air-cooled engine was the type of the future, and his engineers and designers were instructed to concentrate on the development of this type. Since that time every aero engine produced at the Coventry works has been of the radial air-cooled type, with never a departure from the policy then established. The popularity which this type of engine

has now attained indicates the correctness of Mr. Siddeley's views.

Beginning with an engine of the type which has since become famous as the "Jaguar," the Armstrong Siddeley firm did not lose sight of the desirability of a range of types and powers, in which as many component parts as possible should be interchangeable, and this policy is reflected in the present three main types: the "Jaguar," the "Lynx," and the "Mongoose," which have cylinders, pistons, piston rings, gudgeon pins, valves, valve springs, rocker gear, push rods, tappets, master and auxiliary connecting rods, and propeller boss in common. From the point of view of reducing to a minimum the number of spare parts which it is necessary to stock, this utilisation of identical components is, of course, of great advantage. Another is that where a firm or nation adopts the Siddeley engines, an engineer who is familiar with one of the three types mentioned will be competent to look after the other two. This is a very real practical advantage, and one which should not be overlooked. The "Jaguar," the most powerful of the three main types, varies in power according to whether it is geared or direct drive, and also according to the series type, the most powerful being the series VI geared, the normal power of which is 485 b.h.p. The "Jaguar" is a fourteen-cylinder radial engine, with its cylinders arranged in two rows of seven each. The "Lynx," also produced in various forms, such as direct drive geared. also produced in various forms, such as direct drive, geared, and supercharged, may be said to be one-half of a " Jaguar in that it has seven cylinders arranged radially in a single row. This results in the crankcase being different, and also, of course, in a single-throw crankshaft in place of the two-throw crankshaft of the "Jaguar." The "Lynx" develops from 215 to 225 b.h.p., according to whether or not it is geared. The supercharged "Lynx" develops less at sea level, but more at altitudes. Finally, we have the "Mongoose." a comparatively recent addition to the "Mongoose," a comparatively recent addition to the family." This is similar to the "Lynx," but has five

#### LEADING PARTICULARS OF ARMSTRONG SIDDELEY AERO ENGINES.

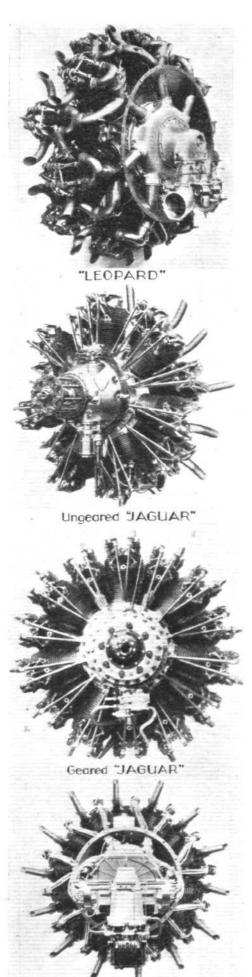
Engine Leopare	l Jaguar IV	Jaguar IV Geared	Jaguar VI Geared	Jaguar Super- charged	Jaguar Super- charged and Geared	Lynx IV	Lynx IV Geared	Lynx Super- charged	Mon- goose	Genet
Stroke (inches)	5 5·5 1512	5 5·5 1512	5 5·5 1512	5 5·5 1512	5 5·5 1512	5 5·5 756	5 5 · 5 756	5 5 · 5 756	5 5·5 540	4 4 251
litres 47.0	$24 \cdot 8$	24.8	24.8	$24 \cdot 8$	$24 \cdot 8$	$12 \cdot 4$	$12 \cdot 4$	$12 \cdot 4$	8.85	$4 \cdot 12$
Compression ratio 5 to 1		5 to 1	5 to 1	5 to 1	5 to 1	5 to 1	5 to 1	5 to 1	-5 to I	51 to 1
Normal engine r.p.m 1500	1700	1850	2000	1700	2000	1900	2100	2000	1620	2200
Normal b.h.p. (sea level) 710	400	425	485	340	365	215	225	182	135	80
Maximum engine r.p.m. 1650 Maximum b.h.p. (sea	1870	2035	2200	1870	2200	2090	2300	2200	1782	2400
level) 800	440	465	510		-	235	245	-	150	88
ear ratio Nil	Nil	0.657	0.657	Nil	0.657	Nil	0.657	Nil	Nil	Nil
ormal r.p.m. propeller 1500	1700	1215	1314	1700	1314	1900	1379	2000	1620	2200
Maximum r.p.m. pro-	1,00	1210	45.00			****	F. C. C. L. C.			
peller 1650	1870	1437	1445	1870	1445	2090	1511	2200	1782	2400
nated altitude (ft.)			2000	7000	14,500			14,500		_
Ower at rated altitude —		_		385	425		-	200		-
gnition Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
oil pressure (lbs./sq. ins.) 60	60	60	60	60	60	60	60	60	60	60
Tachometer drive				ine speed	for all ty	pes			1000	
Engine weight (lbs ) 1439	815	890	890	850	910	513	580	548	380	200
Direction of rotation L.H.T	L.H.T.	L.H.T.	L.H.T.	L.H.T.	L.H.T.	L.H.T.	L.H.T.	L.H.T.		L.H.T.

cylinders, and develops a normal power of 135 b.h.p. at a speed of 1,620 r.p.m.

The two extremes, as it were, of the Siddeley aero engine family have this in common with the rest that they are radial air-cooled, and that many of their detail features are similar. They have not, however, actual components interchangeable with the other three types, those of one engine being larger than the standard and those of the other smaller. These two engines are the "Leopard," of a normal power of 710 b.h.p., and the "Genet," with a normal power of 80 b.h.p. The "Leopard" is, like the "Jaguar," a fourteen-cylinder radial, but its cylinders are of greater bore and its pistons have a longer stroke than those of the "Jaguar." The "Genet" is a light 'plane engine, with five cylinders, similar to, but smaller than those of the three main types. Apart from the size of its cylinders, the "Genet" also differs in that its "odd" cylinder is at the top, while in the "Mongoose" the odd cylinder is at the bottom, with the two upper cylinders leaving a gap at the top centre line. This arrangement of the cylinders of the "Mongoose" has been chosen, we believe, in order to give the pilot a good view straight ahead, between the two

top cylinders. The Armstrong Siddeley aero engines are produced on a large scale in a modern up-to-date factory equipped with the latest machine tools which it is possible to obtain, and hand fitting has been practically eliminated, so that strict interchangeability of parts is achieved. The result has been that, what with the care taken in manufacture and design, these engines have established an excellent reputation at home and abroad. The "Jaguar," hitherto the type most extensively used, has been fitted with excellent results in types of aircraft covering the entire range from singleseater fighters, through two-seater reconnaissance machines, deck fighters, seaplanes and flying-boats, to large commercial aircraft. In this connection it is of interest to mention that the "Jaguars" which have been in use on the London-Paris route of Imperial Airways, Limited, in the Armstrong Whit-worth "Argosy" machines, have established periods of running of 400 hours between overhauls. Three "Argosies" on the London-Paris route have, between them, now flown something like 5,000 hours, so that the total distance covered is somewhere between 400,000 and 500,000 miles, with excellent reliability, and without any machine sustaining any mishap resulting in injury to a paying passenger. In service aircraft also, the "Jaguar" in its various types and forms has done remarkably well, so that it is small wonder that this engine is now in service in no less than twenty different countries throughout the world. The direct-drive " Jaguar " is, of course, the type which has so far done most to establish the reputation of the Armstrong Siddeley aero engines, but the geared version, now in production, promises extremely well, and it should be noted that the new "Argosies" which have been

ordered by Imperial Airways, Limited, and which are to be used on the London-Basle section of the Empire air route London-Egypt-India, will be fitted with geared "Jaguars." The fourteen cylinders give extremely smooth running, while the 3 to 2 reduction gear enables better propeller efficiencies to be obtained in machines with relatively low cruising speed; finally, the use of gearing permits higher engine speeds to be used for taking off, so that the very



gratifying results obtained with the older "Argosies" should be considerably exceeded with the new types. For heavy types of service aircraft, the advantages of the geared engines are, of course, very similar to those obtaining in commercial types.

ing in commercial types.

The supercharged "Jaguar" is, of course, chiefly intended for service flying, where the maintenance of full power to great altitudes is of importance. This type of engine has been in successful use by Royal Air Force squadrons for more than three years, and the supercharged "Jaguar" is claimed to be the first really practical supercharged aero engine in the world to be fitted as standard to service aircraft. This engine incorporates the very latest developments in supercharging equipment, and must be regarded as in the very front rank of

engines of this type.

It is not intended to discuss in detail this week the constructional features of the Armstrong Siddeley aero engines. This must be reserved for a future occasion. But a few words to supplement the table of particulars given on page 293 and the power, etc., curves on page 296, may be of assistance. To fix one's idea of relative sizes, it is worth noting that the "Leopard" is of 47 litres capacity, the "Jaguar" of 24.8 litres, the "Lynx" of 12.4 litres, the "Mongoose" of 8.85 litres, and the "Genet" of 4.12 litres capacity. standardisation of bore and stroke in the case of the "Jaguar" and "Lynx" types results in all the "Jaguars" being of the same capacity whether direct drive, geared or supercharged; and similarly, all the "Lynx" types are of equal capacity and exactly one-half that of the "Jaguar." It will also be noted that standard compression ratio of 5 to 1 has been adopted for all the engines, with the exception of the "Genet," in which the ratio is a little higher, i.e., 51 to 1.

So many of the parts of the Armstrong Siddeley aero engines having been standardised, and the range in power obtained by varying the number of cylinders, it is not without interest to examine the table of data given on page 293, and to ascertain what might be termed the relative "efficiency" of the various engines. Choosing as a basis for such comparison the "horsepower per litre capacity," we find the little "Genet" almost ranking highest, with a figure of 19.4. For the "Mongoose, the figure is 15.25; for the supercharged "Lynx" 14.7; for the geared "Lynx IV" 18.1; for the direct-drive "Lynx IV" 18.1; for the direct-drive "Lynx IV" 17.35; for the supercharged and geared "Jaguar" 14.7; for the geared "Jaguar VI" 19.5; for the geared "Jaguar VI" 19.5; for the geared "Jaguar IV" 16.1, and for the "Leopard" 15.1. These figures all refer to normal power. In the case of the supercharged types, the figures are, of course, unfair, as these engines do not develop their power at ground level but at some particular altitude. Taking instead, the "power at rated altitude we obtain, for the supercharged "Jaguar"

and supercharged "Jaguar" 17·1, and for the supercharged "Lynx" 16·1. It is rather remarkable that, taking the two extremes of power, the 710 h.p. "Leopard" and the 80 h.p. "Genet," the difference should be only 4·3 h.p./litre capacity.

The question is often asked by people outside the aviation world why it is that aero engines do not develop anything

Supercharged "JAGUAR"

AJOR SEGRAVE'S engine was a Napier of the identical type used by Flight-Lieut. Webster when he won the Schneider Trophy in 1927, and by Flight-Lieut. D'Arcy Greig when, at Calshot last November, he flew at 319.6 m.p.h.

This engine is the smallest and lightest prime mover for its power in existence.

It stuffs nearly 1000 h.p. into the space of a travelling trunk.

### IT MUST RANK AS ONE OF THE ENGINEERING MASTERPIECES OF THE DECADE."

Yorkshire Post: 13 March, 1929

\*The greatest formation flight ever attempted was successfully accomplished with Napier engines. Four Supermarine "Southampton" flying boats, each fitted with two Napier engines, flew from England to Australia and back to Singapore, covering 180,000 engine miles, without mechanical trouble.

### NAPIER

The finest aero engine in the World

D. NAPIER & SON LTD. ACTON, LONDON, W.3



SPEED, COMFORT AND RELIABILITY ARE TYPIFIED IN THE ALL - METAL COMMERCIAL FLYING BOATS CONSTRUCTED AT ROCHESTER BY **SHORT BROS.** FOR IMPERIAL AIRWAYS FOR THE NEW AIR SERVICE TO INDIA.

FLYING-BOAT

SHORT

Phone: Chatham 2261

(ROCHESTER & BEDFORD), LTD., BROS. ROCHESTER, KENT.

like as great power in proportion to their capacity as do motor cycle and motorcar engines. There are, of course, a number of reasons for this, but chief among these is, perhaps, the fact that engine speed is restricted, in the case of aero engines, by the question of propeller efficiency. Whereas a racing engine on a motor bicycle or car may be turning at something like 6,000 r.p.m., a fairly average figure for an ungeared aero engine is 2,200 r.p.m. It might have been thought that, power for engine size, or rather engine weight, being so important in the air, all aero engines would by now be provided with reduc-tion gears for propellers. That this is not so is due to certain difficulties encountered in producing satisfactory gears for engines of such high power. Where for engines of such high power. the gears for a car engine are called upon to transmit some 50 or 60 h.p. at the most, in a modern aero engine they are required to transmit efficiently and quietly anywhere between 400 and 500 h.p., when the problem becomes a much more difficult one. The difficulties are, however, gradually being overcome and, as we have already intimated, the Armstrong Siddeley firm has produced most of its types in the geared form, the reduction gear adopted being of the epicyclic type and having proved both smooth and quiet in running and with a gear ratio which gives good airscrew efficiency

Details of the Armstrong Siddeley type of reduction gear will be given in a subsequent article, but in the meantime it may be useful to recall that this gear is so compact that its presence on the engine may readily pass unnoticed if one is not very thoroughly familiar with the Armstrong Siddeley engines. The fact that the gear adds but 3% in. to the length of the engine serves to illustrate the compactness of the gear, and as the airscrew of the geared version rotates in the same direction as in the direct-drive engines, i.e., anti-clockwise as seen from the pilot's seat, no dissimilarity is introduced whereby the geared engine may be recognised. Without going into details concerning the gear, it may be pointed out here that all the gears turn in the same direction, a fact which is probably largely responsible for the silence of running and absence of wear which characterises the Armstrong Siddeley reduction gear.

A feature in their design which doubtless makes for the smooth running of Armstrong Siddeley aero engines is the use of multi-cylinders. Thus, in the "Leopard" and in all the "Jaguar" series, there are 14 cylinders, so that the power impulses overlap and a very even torque results. Moreover, the number of cylinders is large in proportion to the power, or in other words, the power output per cylinder is not excessive. For example, the largest engine, the "Leopard," develops normally 710 h.p., so that even this large engine does not take more than 50 h.p. from each cylinder. The geared "Jaguar VI," which is the most powerful of this series, gives normally 34.6 h.p. per cylinder, while the geared "Lynx" gives 32.1, the "Mongoose" 27, and the "Genet" 16 h.p. per cylinder.

Closely bound up with the question of propeller efficiency and engine drag is the overall diameter of the power plant, the frontal area, and the distance of the propeller from the obstruction to the air flow formed by the engine. By careful design, and also as a result of choosing the two-row radial arrangement of the cylinders, the overall diameter of the "Jaguar" is comparatively small. The diagrams

"GENET MONGOOSE" Geared "LYNX"

at the head of this article show in outline the five main types of Armstrong Siddeley engines, and it will be observed that the diameter of the "Jaguar" is but 45 inches. Due to the use of the same cylinders, etc., on the "Lynx" and "Mongoose," the overall diameters of these two types are the same as that of the "Jaguar." The little "Genet" measures but 36·1 inches across, while the 710 h.p. "Leopard" compresses its power into a diameter of 57 inches, which cannot be regarded as excessive for an engine the maximum power of which is 800 b.h.p.

An improvement is the ring cowling, experiments with which are now being made not only at the R.A.E., but also by various private concerns. No details of results may be given at the moment, but it is common knowledge that by the use of the ring cowling, the engine drag of a radial can be very materially reduced. In fact, it is probably no exaggeration to say that, in a multi-engined aircraft using radial engines, the difference in drag will be sufficient almost to enable the machine to "pay for itself" without a subsidy. Should these expectations be fulfilled, not only will the fact give added impetus to the radial type of aero engine, but also to commercial aviation in general.

The special advantage of the ring cowling, which is a British invention and patented, is that, as far as can be seen at present, it reduces the drag of a radial engine quite as much as do the elaborate cowlings which have been developed in America, for instance, and without the attendant difficulties connected with cooling, which is, if anything, more effective with the ring conditions there without it.

cowling than without it.

In the table on page 293 are given the weights of the various types of engine, and also the normal b.h.p., but not the specific weights. If one calculates these, using the "normal" b.h.p. as a basis for the naturally-aspirated engines and "power at rated altitude" in the case of the supercharged models, the following figures for weight per normal b.h.p. are obtained: "Leopard" 2.02; "Jaguar IV" 2.04; geared "Jaguar IV" 2.09; geared "Jaguar VI" 1.83; supercharged "Jaguar VI" 1.83; supercharged "Jaguar" 2.14; "Lynx IV" 2.39; geared "Lynx IV" 2.58; supercharged "Lynx" 2.74; "Mongoose" 2.81; and "Genet" 2.50. Considering that these ratios are obtained with engines rated on a conservative basis with low compressions, all these figures are good, but those for the geared "Jaguar VI" and for the ungeared "Leopard" in particular

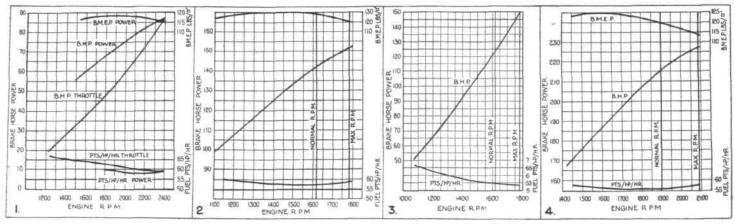
are excellent.

The power, etc., curves on page 296 can be read off directly, and do not call for any comment beyond calling attention to the low specific fuel consumption of all types.

We have already intimated that the details of the Armstrong Siddeley aero engines will be dealt with at a later date, when some of the design and constructional features will be described

and illustrated. It is not out of place to mention here, however, that the question of maintenance has been most carefully studied, and that the design of the engines is such that inspection and overhaul can be carried out with a minimum of disturbance to parts and components not directly concerned. For example, the radial arrangement of the cylinders, and their attachment to the crankcase by

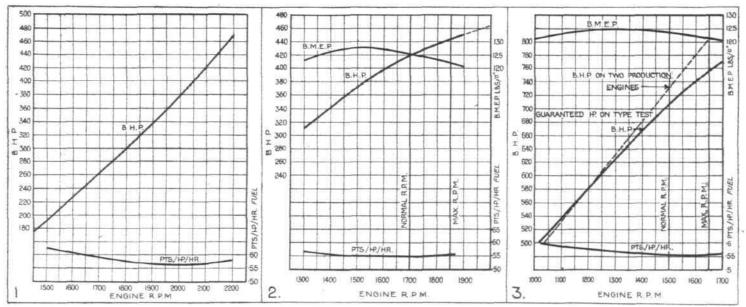
"LYNX"



THE ARMSTRONG SIDDELEY AERO ENGINES: Fig. 1, power and throttle consumption curves of "Genet" Mark II. Fig. 2, full throttle power curves of the "Mongoose." Fig. 3, throttle consumption curves of "Mongoose." Fig. 4, full throttle power curves of "Lynx IV." The fuel in all cases was standard aviation 80 per cent. and benzol 20 per cent.

patented system of screw threads and locking rings, enables any cylinder to be removed in a very short time without interfering with any of the other cylinders. Accessibility and simplicity are two of the outstanding

features of the design, and items such as oil filters, valve operating gear and sparking plugs are conveniently mounted on the front of the engine, while magnetos and carburettors are located in an accessible position on the back.



THE ARMSTRONG SIDDELEY AERO ENGINES: Fig. 1, throttle consumption curves of "Jaguar IV." Fig. 2, full throttle power curves of "Leopard."

H

The Royal Air Traveller
On April 3, The Prince of Wales visited H.M. The King at Bognor by air. He left Northolt Aerodrome in a West-land "Wapiti," piloted by Flt. Lieut. Don and escorted by another machine, and landed at Tangmere Aerodrome, from where he motored to Craigweil, Bognor. A return flight was made the same day.

2

Night Service Between Paris and London

THE French Air Union opened a night air service between Paris and London on April 9. The machine, piloted by M. Bajac, carried mails and nearly one ton of goods. It started from Paris at 1.13 a.m., and reached Croydon at 4.8 a.m. Arrangements for the necessary illumination along the route of 225 miles worked satisfactorily. This service will run each week-night, and a similar service will be opened between Brussels and London with Handley Page (Rolls-Royce) machines. N.F.S. Activity

COL. THE MASTER OF SEMPILL and Sir Alan Cobham have been testing light planes at Croydon to discover which can be recommended for the training scheme of National Flying ervices, Ltd.

The Northampton Air Pageant

The Northampton Aero Club will be holding their Air Pageant, at Sywell Aerodrome, on Whit Monday, May 20. Sir Alan Cobham's Australian Flight

SIR ALAN COBHAM has presented to the Commonwealth National Library, Canberra, the journey log-book relating to the D.H. 50] seaplane on which Sir Alan made his flight = E

to Australia and back in 1926. Sir Alan has received a letter from the Prime Minister of Australia acknowledging in warm terms, this gift.

New R.A.F. Seaplane Base

THE R.A.F. is establishing a permanent seaplane base at Loch Ryan, Wigtownshire, and it is expected to be in use by the end of this month.

King's Cup Air Race

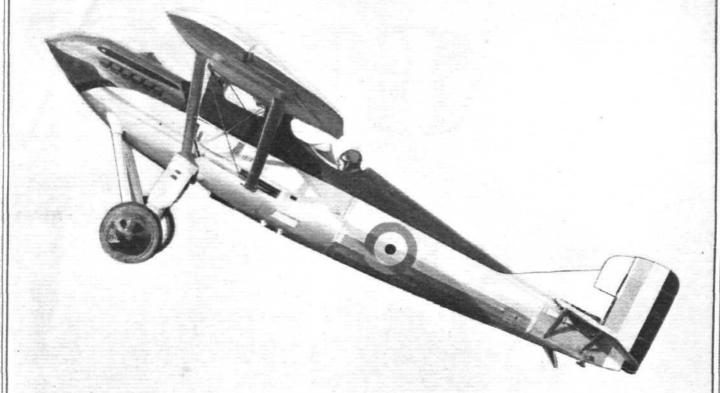
Schneider Contest, 1929

THE race for the cup presented by His Majesty The King will be held on July 5 and 6 next. The start and finish will be at Heston Aerodrome. The course will be similar to that of last year, but there is the possibility of it being flown in the opposite direction. Full details will be issued shortly.

The Royal Aero Club has arranged with the Orient Line for the s.s. Orford to be the Club's Official Liner for the Schneider Contest. The Orford is 20,000 tons and provides 550 berths (single and double). The Orford will be available for the accompandation of manhor of the Barrel Age Club for the accommodation of members of the Royal Aero Club and its Associated Clubs from Friday till Sunday, September 6-8. The Orford will be berthed opposite Ryde Pier, the start and finishing point of the race, and will give uninterrupted view of the whole of the course. Full det Full details as to prices and method of booking, etc., will be announced shortly. (Note: We would draw our readers' attention to the paragraph published in last week's issue (p. 287). concerning the application for berths by ships to witness the

Schneider Trophy Contest.)

Westland Wizard Rolls - Royce F. Engine



# ROLLS-ROYCE AERO ENGINES

ROLLS-ROYCE LTD. 14-15 CONDUIT STREET, LONDON, W.1

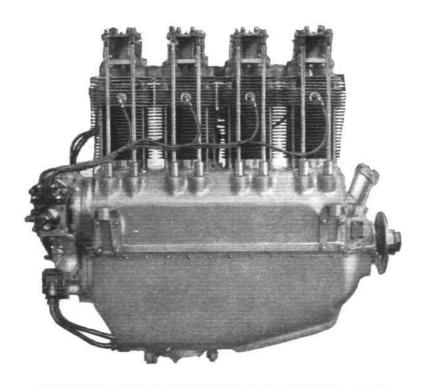
## 25,000 MILES

ACCOMPLISHED WITH ON

# GIPS 1

TO HOLD OFFICE

85/100 H.P. GIPSY ENGINE



HUNDREDS IN WORLD-WIDE USE

### And the tou

THE DE HAVILLAND AIRCRAFT OF CANADA LTD., BAY-RICHMOND BUILDING, 372 BAY STREET, TORONTO 2, CANADA.

THE DE HAVILLAND AIRCRAFT CO., LTD. STAG LANE AERODROME, EDGWARE, MIDDLESEX.

Streets

### RELIABILITY TOUR

OUTINE ATTENTION BY

WORLD'S RECORDS)

# ENGINE HIGHT AERO ENGINE

In order to demonstrate in the most convincing manner possible the utter dependability of the GIPSY engine, it was decided to submit a standard example to the only infallible test—the test of prolonged use under everyday flying conditions.

Accordingly, a standard Gipsy engine taken at random from the flow of production was installed in a standard Moth. Official co-operation was secured, and the engine was sealed by an official of the Air Ministry Aeronautical Inspection Directorate, and arrangements made for accurately recording under official observation all supplies of petrol and oil put into the machine.

A PROLONGED TOUR WAS THEN COMMENCED. The machine has been flown at a constant cruising speed of 85 m.p.h. by Airspeed Indicator (checked at 88 m.p.h. ground speed), and the following is the log to date:

Total number of hours flown, 288. (= 25,344 miles at 88 m.p.h.)

Attention: Routine cleaning of filters and plugs and setting of tappet and magneto clearances, and other normal external adjustments, as advised in maker's handbook.

Replacement: One magneto of proprietary manufacture.

Petrol consumption: 4.7 gallons per hour (Pratt's spirit).

Oil Consumption: .37 pint per hour (Wakefield's Castrol oil).

N.B.—In connection with petrol consumption, it should be remarked that ordinary commercial No. 1 spirit was used and that the figure includes warming up before each flight and literally miles of taxying.

THE ENGINE HAS NOT BEEN TOUCHED

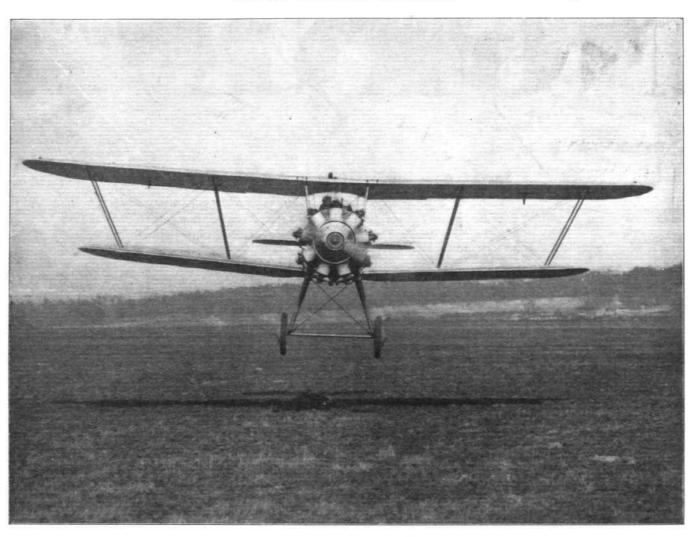
### continues!

THE WRIGHT AERONAUTICAL CORPORATION,
PATERSON, NEW JERSEY,
U.S.A.

THE DE HAVILLAND AIRCRAFT PTY., LTD., WHITEMAN STREET, SOUTH MELBOURNE, AUSTRALIA.

### HAWKER AWFINCH

with JUPITER Mk. VII Engine.



["FLIGHT" Photograph]

A single-seater fighter of outstanding merit incorporating the Hawker patent system of metal construction.

### THE H. G. HAWKER ENGINEERING CO., LTD.

Specialists in Military Aircraft.

Works: KINGSTON.

Aerodrome: BROOKLANDS.



Telephone: KINGSTON 6272 (4 lines)

Cables: "HAWKER, KINGSTON."



THE Annual General Meeting of the Royal Aero Club was held on Wednesday, March 27, 1929, Lord Thomson, Chairman of the Club, presiding.

Election of Committee .--The result of the Ballot for the nine vacancies in the Committee was announced as follows:—Lieut.-Col. Sir Francis K. McClean, A.F.C.; Wing-Commander T. O'B. Hubbard, M.C., A.F.C.; T. O. M. Sopwith, C.B.E.; Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.; F. Handley Page, C.B.E.; Lieut.-Col. J. D. Dunville, C.B.E.; Lieut.-Col. M. O. Darby, O.B.E.; Griffith Brewer; Capt. C. B. Wilson, M.C.

Election of President and Vice-President.-The Duke of Atholl, K.T., G.C.V.O., D.S.O., and the Duke of Sutherland were unanimously elected President and Vice-President, respectively.

The Chairman, Lord Thomson, in his speech to the members dealt with the present position of the club.

said, regarding:-

Membership.—The membership of the Club has been maintained, but it is still possible to deal with a larger number with the present accommodation and staff. The number of meals served shows a slight increase over last year, but there is a somewhat large falling off in the number of dinners. accounts for the year also show a falling off in the receipts from the club-house. One can only assume that this is accounted for by the exceptionally fine summer we had. The receipts showed a decided falling off in the summer months. The accounts show a loss of £113 14s. 8d. This is very disappointing as the previous year showed a profit for the first time for many years and it was hoped that this profit would be maintained. The accounts are open to inspection of the members and if they would like to see them at any time they have only to apply to the Secretary. The activities of the Club are mostly concerned with the sporting side of The annual race for the King's Cup resulted in a aviation. win—for the second year in succession—of W. Laurence Hope, on a D.H. 'Moth.' A new race was held this year in conjunction with the King's Cup, that for the trophy and prizes offered by Mr. J. D. Siddeley. This race was confined to private owners and clubs, and the cup was won by Miss Winifred Spooner, representing the London Aeroplane Club.

"Touring.-There has been a large increase in touring during the year 1928. The Club issued 157 carnets, as against 77 the previous year. The introduction of the carnet for aircraft touring abroad is one for which the Royal Aero Club can claim full credit. It was entirely due to the persistence with which the Club worked on the Conference of the F.A.I. that brought the carnet into being. For the information of the members, the carnet is issued to members of the Club at a small fee, amounting to £1 5s. or £1 11s. 6d., according to the value of the aircraft. No deposits are required. "Aviators' Certificates.—There has been a

satisfactory increase in the number of aviators' certificates issued during the year. The excellent work of the light aeroplane clubs is, in a very large measure, responsible for this very satisfactory increase. In 1927 we issued 145, whereas

in 1928 the number was 283.

Affiliated Clubs .- A number of clubs have been formed in the Colonies, and all these clubs are affiliated to the Royal Aero Club. At the present time there are clubs in South Africa, Australia, Singapore, East Africa, India and Burma. We are continually receiving visitors from these clubs and they enjoy the hospitality of the Club here during their stay in

General Council of Associated Light Aeroplane Clubs.-We have a General Council of Associated Light Aeroplane Clubs and 14 clubs are represented on this Council. The work of this General Council during the past year has proved of benefit to all the clubs. Uniformity of action has been maintained and in certain cases, where the Government has been approached, the full weight of all interests has been brought to bear with satisfactory results. Last year it was decided in the interests of all clubs to curtail, somewhat, the flying meetings held during the year. Through the General Council it was decided to divide the country into four sections, each section holding an official meeting. meetings at Blackpool and Bristol showed a profit and those at Hamble and Birmingham showed a small deficit. these meetings, however, were well organised by the Clubs operating in the respective areas. A pooling of profits was arranged and each associated club benefited by the profits accruing from the meeting.

accruing from the meeting.

"World's Records.—During the year the following World's Records were obtained by British aircraft:—

Speed over 500 km. with 500 kilos.—255.333 kms. per hour.

Capt. H. S. Broad (D.H. "Hound," Napier "Lion").

Speed over 100 kms. with 1,000 kilos.—261.172 kms. per hour.

Capt. H. S. Broad (D.H. "Hound," Napier "Lion").

Speed over 500 kms. with 1,000 kilos.—255.333 kms. per hour.

Capt. H. S. Broad (D. H. "Hound," Napier "Lion").

Light Aeroblanes (Two-seater): Height.—6.054 metres. Light Aeroplanes (Two-seater): Height.—6,054 metres. Capt. and Mrs. De Havilland (D.H. "Gipsy-Moth").

Speed over 100 kms.—192.864 kms. per hour. Mr. and Mrs. Alan S. Butler (D.H. "Gipsy-Moth").

"British Record.—Greatest Speed over 3 kms. (Seaplanes).

Flight-Lieut. D'Arcy Greig ·514 · 308 kms. per hour. (Supermarine Napier S.5).

"It is interesting to note that this British Record beats the World's Record by nearly 2 kms. per hour.

"Notable Performances.—There have been many notable performances during the year 1928 in which British aviators and British aircraft took part. I will mention a

few :—
"Sqdn.-Ldr. H. J. L. Hinkler. Flight to Australia in a light aeroplane, "Avian," fitted with a "Cirrus" engine, in 15½ days; Lady Bailey, flight to South Africa and back in a D.H. "Moth," fitted with a "Cirrus" engine; Capt. Kingsford-Smith, Pacific flight; Capt. C. D. Barnard, India to England in 4½ days; Sir Alan J. Cobham, flight to South Africa and back; Lady Heath, flight from Cape Town to England; Miss Winifred Spooner, in the King's Cup and Siddeley Trophy Race.

"F.A.I. Conferences .- During the year the Club has been represented at three International Conferences of the F.A.I. by Lieut.-Col. M. O'Gorman. These Conferences entail a lot of time and work and we owe a deep debt of gratitude to Lieut.-Col. O'Gorman, who is the Club's repre-

sentative at these Conferences

"F.A.I. Gold Medal.—The F.A.I. Medal for the most meritorious performance for the year 1928 was awarded to

Sqdn.-Ldr. Hinkler.

Benevolent Work .- During the year the Flying Services Fund has made grants and allowances to parents of children and deceased airmen amounting to £587 11s. 7d. Included in this sum are grants towards the education of the children of deceased airmen. The Flying Services Fund is run by the Royal Aero Club and, in addition, the Club allows its Secretary to be Chairman of the Grants Committee of the Royal Air Force Memorial Fund, which, last year, distributed £12,000. The Secretary is also on the Committee of the Officers' Association and British Legion.

'Committees .- Many of you are possibly unaware of the very large number of committees of the Royal Aero Club working on the various subjects connected with aviation. During the past year nearly 50 meetings of various committees were held, and I feel sure the Club would wish to thank those of its members who give us much of their valuable time on

these committees.

"Schneider Contest.—Although during the past year there has not been a Schneider Contest, the particular Committee responsible for the organisation of this year's kept exceedingly busy. Visits to various race has been sites all over the country have been made, with a view to selecting the best possible course for the race. As you know, the final choice is the Solent and Spithead. Already there are six committees working on the organisation of this year's contest. These Committees are working in conjunction with the Air Ministry, Admiralty, the Commander-in-Chief, Portsmouth, Harbour Masters, Trinity House, etc. On all On all these committees the Club has its representatives. There are so many details to be thrashed out, for which the Club is, in a way, responsible. Apart from the race itself, the Club has to educate the various towns on the course as to the importance of making adequate provision for the crowds likely to attend, make special arrangements for the policing

of a course 50 kms. in length, and berthing of a large number of liners on the course, etc. I think I can say now that the Club has practically completed its negotiations for the provision of a liner, as a grand stand for the members. Full details will shortly be issued to all members.

"Club Premises.—The lease of these premises ends very shortly and the question as to the future accommodation for the Club is one which is now exercising the minds of the Committee. The financial position of the Club cannot be regarded as too satisfactory, and it is quite possible that we shall have to call for further assistance from the members. One or two proposals will shortly be considered by the Committee. One of these is a suggestion that the whole of the Aeronautical Societies should be housed under one roof with certain rooms and lecture halls common to all. This, however, is only a suggestion at the moment. The

object of holding this General Meeting at the end of a House Dinner was that we hoped members would take the opportunity of discussing and criticising the work of the Club. We hope that members will take full advantage of this opportunity and that we may receive valuable suggestions for the future welfare of the Club."

The following Members joined in a general discussion as to the future housing of the Club:—Lieut.-Col. M. O'Gorman, C.B.; Capt. F. L. M. Boothby; Mr. M. L. Bramson; Mr. Griffith Brewer; Mr. F. Handley Page, C.B.E.; Mr. W. L. Hope; Air Vice-Marshal Sir Sefton Brancker, K.C.B., A.F.C.; Maj. T. H. R. Garratt; Capt. A. G. Lamplugh; Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P. Offices: THE ROYAL AERO CLUB.

Offices: THE ROYAL AERO CLUB, 3, CLIFFORD STREET, LONDON, W.1. H. E. PERRIN, Secretary.

#### TWENTY-FIVE YEARS OF FLYING\*

#### Personal Impressions of the Past

N this volume there has been no attempt by the author to write a complete history of the first quarter of a century of flying, although his long and intimate experience would justify such a history. He has collected his personal impressions as a journalist, whose career was dedicated to aviation almost from its beginning at the wish of his employer, the late Lord Northcliffe. He is quite candid about his appeal, which is mainly aimed at the larger public, for which he has nearly always written. Thus, there is no pretension to technical matters nor to an accurate record of air events. Mr. Harper still studies the psychology of his public and analysises what is their medicine and their sweet. The result is a light and genial story, entirely readable, and rising to all that you expect from Mr. Harry Harper. There is the delightful play upon superlatives, and the sentimental presentation of those pioneer figures of the past, with whom he was so intimate at the momentous occasions in their careers. His interest, as a journalist, in the flying feats which made history was focussed upon the human element rather than the technical element, so that if we do not learn anything from his volume we become very close observers of scenes which we were not able to attend for various reasons.

Under the author's guidance we can view with a true perspective those flights of the past, and, although in these days we may have spent all our adventurous reaction to long ocean flights, successful or unsuccessful, we can appreciate

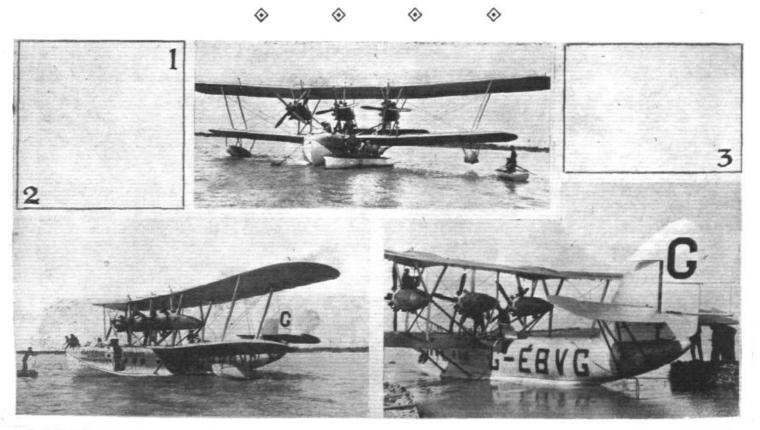
for instance, the full hazard of the Channel crossing which Louis Bleriot made in 1909. Facing a sea stretch of over twenty miles in expectation of an air-cooled engine running at least forty minutes, although it had never before run longer than about twenty minutes without overheating and losing power, was, relatively, as courageous as facing the Atlantic ocean in recent times.

The author's descriptions of these pioneer flights bring them to life again and he recaptures the spirit which animated them at the time. His story of the London to Manchester race, with its international rivalry, its feverish excitement and its climax, is dramatic reading. Flying was essentially a dramatic affair in those days of struggle and danger, and it naturally wrought an intensity of public feeling which technical developments have quenched today. Without any technical assistance, Mr. Harper does convey the height of those pioneer accomplishments, and he does not allow us to look down upon them superiorly.

look down upon them superiorly.

If our achievements and experiences are tremendous to us, so were their achievements and experiences tremendous to them. We may cross the ocean whilst they crossed the pond, but they were as likely to fall into the pond as we are into the ocean. In conclusion, one must mention that this volume is profusely illustrated.

<sup>\* &</sup>quot;Twenty-five Years of Flying," by Harry Harper. Published by Hutchinson and Co., price 12s. 6d. net., 13s. post free, FLIGHT Offices.



THE ENGLAND-INDIA AIR ROUTE: These three snapshots, kindly sent us by Mr. J. J. Ide, show the Short "Calcutta" at Ostia on Easter Sunday. The machine is shown in 2 just after its arrival. In 1 Sir Samuel Hoare is seen leaving the "Calcutta," while in 3 the machine is being prepared for refuelling. (See p. 299.)

### A complete range of AIRCRAFT AND ENGINES

S makers of the widest and most successful range of British aircraft and engines, the Armstrong Siddeley Development Co., Ltd., is in a unique position to offer the results of its extensive experience on matters relating to air transport, training, fighting or private flying machines on land or sea in any part of the world.

#### **AIRCRAFT**

includes the All-Steel Atlas fighter and reconnaissance machines, the All-Steel Siskin single seater fighter, the All-Steel A.W.14 high performance fighter and the Argosy Air-liner.

#### **ENGINES**

include the 700-750 h.p. Leopard, the 460-500 h.p. Geared Jaguar, the Supercharged Jaguar, the 230 h.p. Lynx (geared or supercharged), the 130-140 h.p. Mongoose and the 80-88 h.p. Genet.

> Exposition Internationale d'Avions, Geneva. April 27 to May 5. Armstrong Siddeley Aero Engines Stand No. shown on

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1 ARMSTRONG SIDDELEY MOTORS LIMITED London: 10 Old Bond Street, W.1 Head Office and Works: Coventry.

CAREE CAREE

### AIRCRAFT & AERO ENGINE PR



#### Making Armstrong Whitworth Steel Wings

Over a thousand men are building steel aircraft at the Whitley Works of Sir W. G. Armstrong Whitworth Aircraft Limited.

Four other Aircraft Manufacturers are building similar aircraft under licence from Sir W. G. Armstrong Whitworth Aircraft Limited.

Armstrong Whitworth steel aeroplanes were the first steel aircraft to be used in quantity and manufactured in series.

They have been standardised as the single seater fighters of the Royal Air Force and have been in production for over six years.

Armstrong Whitworth spars have shown no deterioration after five years' service.

Steel is stronger, safer and surer in service than any other metal.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1

### DUCTION ON THE GRAND SCALE



#### Making Armstrong Siddeley Air-cooled Aero Engines

Armstrong Siddeley Motors Limited are pioneers of the high-powered air-cooled aero engine.

Their range of engines is the most complete and most universally satisfactory in service. It includes engines of 750, 460, 230, 130 and 80 h.p. Armstrong Siddeley designs have been in the forefront of development for the last ten years.

Their many patented features such as cylinder head, cylinder locking ring, epicyclic gearing and supercharger have proved their value under the severest conditions.

For the greatest reliability and the most enduring economy at home or overseas, on land or sea, fit an Armstrong Siddeley air-cooled engine.

#### ARMSTRONG SIDDELEY MOTORS LIMITED

Head Office and Works: Coventry.

London: 10 Old Bond Street, W.1

### Four hundred hours BETWEEN OVERHAULS

The Armstrong Siddeley Jaguar engines used by Imperial Airways Limited on the Argosy airliners flying between London and Paris have established a period of 400 hours between overhauls, the usual top overhauls having been discontinued altogether.

The new and improved Argosies for the first stage of the new London-India

Service are being fitted with

Geared Jaguars.

ARMSTRONG SIDDELEY
MOTORS LIMITED
COVENTRY



India Air Mail Arrives

A WEEK after it had been despatched by air from London. the India mail arrived punctually at Karachi. The Armstrong-Whitworth "Argosy" ("Jaguars") left Croydon on Saturday, March 30, and arrived at Paris and Basle the same day. Passengers and mail then continued by train to Genoa, where, on Sunday, they embarked in the Short "Calcutta Jupiters ") flying-boat for Naples. On Monday, Athens, via Corfu, was reached, and on Tuesday the flying-boat stage was completed, via Tobruk, at Alexandria. The star to Gaza was flown on Wednesday in the D.H. "Hercules Jupiters "), continued to Baghdad on Thursday, and to ngeh, on the Persian Gulf, via Bushire, on Friday. This last Lingeh, on the Persian Gulf, via Bushire, on Friday. stage was slightly delayed by a sand-storm which made the machine turn back to Baghdad, but it resumed later on the same day and was only 45 minutes late at Lingeh, 845 miles On Saturday, the machine reached Karachi after a flight of 840 miles, thus completing the Empire service of about 5,000 miles within the scheduled time of one week. Sir Samuel Hoare and his secretary, Mr. Ll. Bullock, left the route at Alexandria, but Air Vice-Marshal Sir Vyell Vyvyan completed the whole journey and mentioned, when interviewed, that it had been most comfortable. Actual flying time was 53 hrs. 35 mins. On the first return flight of the mail service which started at Karachi the next day, Sunday, April 7, Air Vice-Marshal Sir Geoffrey Salmond, Viscount Chetwynd, his daughter and secretary, and Air Vice-Marshal Sir Vyell Vyvyan were passengers. On April 8 the arrival Sir Vyell Vyvyan were passengers. at Basra was reported. On April 9 the machine left Baghdad three hours before time, without local mails. Air Force machines were dispatched with the mails, hoping to catch up the "run-away," which, however, left Cairo for Alexandria in the evening, still ahead! Air Minister's African Tour

SIR SAMUEL HOARE commenced his air tour along the Cairo-Cape route after disembarking from the India air service "Calcutta" flying-boat at Alexandria on April 2. With his secretary, Mr. Ll. Bullock, and Air Vice-Marshal Webb-Bowen (Air Officer Commanding, R.A.F., Middle East), he left Aboukir on April 4 and landed at Khartoum the next day after a pick at Luver. Whetever was left as the next day, after a night at Luxor. Khartoum was left on April 6.

Southern Cross Still Missing

The search for the missing Southern Cross (Fokker) monoplane in north-west Australia, where it is thought to have landed during its non-stop flight from Sydney, which started on March 30, has proved that it was the Port George mission station, on the north-west coast, upon which a note was dropped from the monplane the day after its start. This note asked for the direction to Wyndham. Later that day it is thought that the airmen, Sqdn.-Ldr. Kingsford-Smith and Flight-Lieut. C. Ulm, discovered that only one hour's petrol remained, and they turned back for the Mission. They sent a wireless message later stating that they were forced to land and all hands were exhausted. Extensive aircraft search has been made since then. The Western Australian Government has taken the matter in hand, and the Western Australian Airways Co. is temporarily suspending its north-west air service in order to release their machines for the search. This flight was intended to be the first stage of a flight to England. Vague reports of the missing airmen still continue to come in.

American Light 'Plane Tour Mishap

CAPT. W. N. LANCASTER crashed at Port of Spain, Trinidad, on April 7, whilst taking off for the next stage of his American tour to Maracay, Venezuela. His American "Cirrus-Avian" was apparently wrecked and he was slightly injured. He was compating for a gold model offered for the injured. He was competing for a gold medal offered for the first light 'plane flight from New York to South America and back, a distance of about 10,000 miles.

Atlantic Flight Competition

Col. W. E. Easterwood, Jun., a Texas millionaire, is reported to have arrived in London in connection with an Atlantic flight competition which he is promoting. He is stated to be offering £5,000 for the first successful flight from Rome to New York and Dallas, Texas. It is also stated that a German pilot, Maj. Otto Schey, and an Italian pilot, Count Delmatta, have notified their intention of competing. Col. Easterwood is to tour Europe by air to interest other competitors

French Flight to Indo-China

MM. Bailly, Resinensi and Marsot, who left Paris for Indo-China, on March 26, in a Farman F.190 (Bristol "Titan" engine), reached Saigon on April 5, having flown nearly 7,000 miles in ten days. This machine is a cabin monoplane

Business Magnate's Mishap

THE long business air tour of Mr. Van Lear Black, the American millionaire, met with a slight mishap on April 5 when his Fokker (Wright "Whirlwinds") monoplane made a forced landing after starting from Rome for Paris. Apparently engine trouble arose, and whilst it was landing over the mouth of the Nervia torrent the monoplane was seriously damaged. The crew were shaken, but uninjured.

Spanish Flight in S. America

THE two Spanish airmen, Capt. Jimenez and Capt. Iglesias, who recently flew the S. Atlantic from Seville to Brazil, are continuing their air tour of S. America. In their Spanish-built Breguet 19 (Hispano-Suiza), they landed at Buenos Aires on April 4.

Graf Zeppelin's Programme

At the end of this month the Graf Zeppelin will probably commence another Mediterranean cruise of about 60 hours' duration. In May, a cruise may be made over Austria, whilst later in that month a second Atlantic flight is projected. If this is successful it may be repeated in June. gramme arranged also provides for a cruise to East Germany at the end of the summer with an intermediate landing in Berlin. The Atlantic flights will be regarded as a further opportunity for training the crew. The number of passengers carried will be limited, the fare being £150, whilst the Press monopoly, which was in vogue on the last Atlantic cruise, will be dropped. If newspapers wish to be represented they will have to send their representatives as ordinary passengers.

More "Moths" for China

China has ordered twelve more "Gipsy-Moths" from

the De Havilland Aircraft Co., Ltd., which brings their order to 22 since the beginning of this year.

Baghdad-Teheran Air Service On April 6 the first direct weekly air mail service between Baghdad and Teheran was due to start from Teheran. The return flight will commence April 12, and every successive Friday

Swedish Atlantic Flight Planned

The Swedish pilot, Ahrenberg, proposes to start on a Transatlantic flight next June, following a course via Iceland, Greenland and Labrador

French Prize for Autogiro Inventor

SENOR DE LA CIERVA, the inventor of the Autogiro, has been awarded the Lohm Prize by a commission of the Aero Club de France. This means an annuity of £240, and it was awarded for the Autogiro flight from London to Paris.

German Gliding Record

A DARMSTADT pilot, Herr Nehring, has made a gliding flight of 44½ miles in a straight line, breaking the record set up by himself last year by nearly 875 yards. The flight was made along the so-called Bergstrasse from Darmstadt, in Hessen, to Bruchsal, in Baden. A prize of 5,000 marks [250] has been offered by a Berlin newspaper for a gliding flight in a straight line of 62 miles.

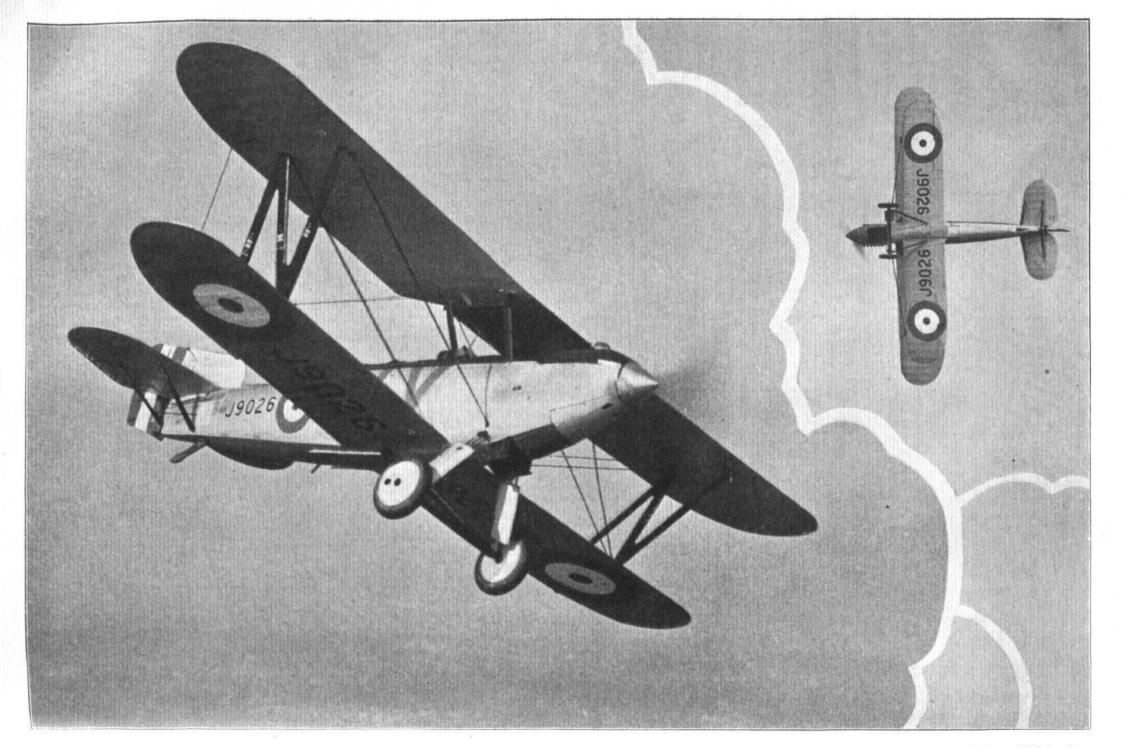
New Malta Aerodrome

It is reported from Malta that the R.A.F. is to construct another large aerodrome close to that at Halfar.

Imperial Airways

IMPERIAL AIRWAYS celebrated its fifth birthday on April 1. Since April 1, 1924, Imperial Airways has completed, on Handley Page and Argosy air-liners, over four million miles on London-Continental routes, and carried over 100,000 passengers. There has been no accident resulting in injury to any fare-paying passenger during the last four

Air Line Performance
A FLIGHT between London and Paris was made on April 1 by an Armstrong-Siddeley air-liner of Imperial Airways in 100 mins. The machine, which weighs over 8 tons, carried 18 passengers and a crew of three.



THE LATEST VERSION: The Fairey "Fox," a High-performance single-engined Bomber, has been fitted with the Rolls-Royce F-type engine. The clean



### SUPERMARINE AVIATION WORKS, L'D. SOUTHAMPTON.

DESIGNERS AND BUILDERS

OF THE **FAMOUS** 

"SOUTHAMPTON"

TWIN ENGINE

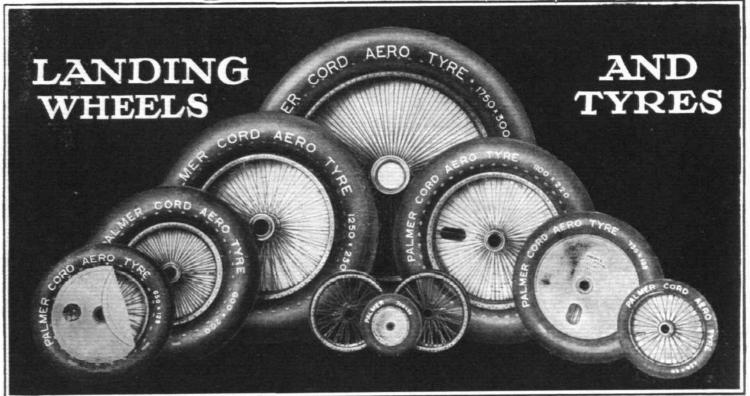
**FLYING BOATS** 

THE FIRST OF EIGHT SERVICE TYPE "SOUTHAMPTONS" (LORRAINE ENGINES) TO THE ORDER OF THE ARGENTINE NAVAL AIR SERVICE.









#### STANDARD SIZES.

Tyre Size	Wheel No.	H	ab	Track		Wheel	Hub		Track	Tyre	Wheel	Hub		Track
		Length	Bore	Line	Tyre Size	No.	Length	Bore	Line	Size	No.	Length	Bore	Line
575 × 55	168 195	m/m 111'12 130	m/m 25 4 38 09	m/m Central Central	700 × 100	176 179	m/m 178 178	m/m 44 45 55	m/m Central 132/46	1000 × 180	148 149 155	m/m 220 185 220	m/m 80° 55°	m/m Centra Centra
506 × 60	16	111'12	25 4	Central	650×125	119	178	55	132/46	- 11	166	185	55	125/60
450 × 60	30 172	130°	31.75 38.09	Central Central		147 188 336	178 120 178	55° 34°92 44°45	Central Central 132/40	900 × 200	107 108 128	185 185 229	55° 56° 86°87	Centra 125/60 Centra
575 × 60	21 180 186 190	160° 150° 120° 150°	28' 38'09 34'92 38'09	Central 104/46 Central Central	750 × 125	77 92 95	178 185 185	44 45 55 55	132/46 135/50 Central	"	157 157 202	256° 185° 185°	80 80 60 32	Centra Centra Centra
900 × 75	21 180	160° 150°	28 38 09	Central 104/46	" "	99 112 176	178 150 178	38 89 38 09 44 45	132/46 Central Central	1100 × 220	134 136	220° 250°	66.67 80	Centra
"	186 190	120° 150°	34 92 38 09	Central Central	"	179	178	55'	132/46	975 × 225	192 194	185°	90°32	Centra 125/60
786 × 75	78 79 100	178° 178° 178°	44 45 44 45 38 09	132/46 Central 132/46	800×150	161* 162° 163° 169†	185° 185° 185° 185°	55° 55° 66°67	135/50 Central 135/50 135/50	1250 × 250	314 154	250 304 8	80° 101°6	Centra
600 × 100	101 196 188	178° 178°	31 75 55 34 92	132/46 Central		177 183 211°	185 185 185	55° 55° 60°32	135/50 Central 135/50	1500×300	305 306	304 8 304 8	152'4 101'6	Centra
"	304 333	150° 120°	38'09 34'92	104 46 Central	1000×150	167	185	55	125/60	1525 × 325	197	304'8	101'6	Centra
700 × 100	77 92 95 99	178° 185° 185° 178°	44 45 55 55 38 89	132/46 135/50 Central 132/46	**	174 182 187 201	250 185 220 185	80° 55° 66°67	Central Central Central	1750 × 300	139 191	400 350	152 <sup>-4</sup> 150 <sup>-3</sup>	Centra
	112	150	28.08	Central		210	185	60'32 60'32	125/60 Central	1750 × 350	193	400	125	Centre

†Wheel No. 169 is fitted with Ball Bearings \*Wheek Nos. 161, 162, 165, and 211 are of sironger type than the other wheels for 800 × 150 tyres.

Greens gun equipment is now a standard fitting on all wheels.

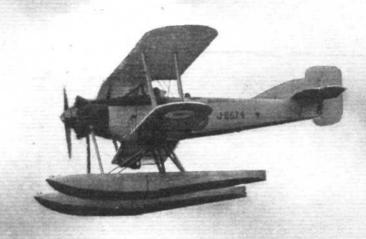
### THE PALMER TYRE LIMITED, Contractors to the Admiralty, the War Office, and the Air Ministry,

Telegrams: \_\_\_\_\_ 100-106, CANNON STREET, LONDON, E.C.4.

Telephone:— Mansion House 6530.

Gloster "Goring" Seaplane

"Flight" photograph



### GLOSTER

#### AIRCRAFT COMPANY LIMITED,

SUNNINGEND WORKS, CHELTENHAM, GLOS. GLOSTER WORKS AND AERODROME, BROCKWORTH, GLOS.

VVVVVV

ZVVVVVV

MANUFACTURERS OF, AND SOLE LICENSEES FOR, THE GLOSTER HELE-SHAW-BEACHAM VARIABLE PITCH PROPELLER
All applications to be made to the GLOSTER AIRCRAFT CO. LTD., CHELTENHAM.

METAL CONSTRUCTION OF AIRCRAFT. The GLOSTER Company holds a unique position as regards Metal Aircraft, its staff having been engaged on Corrugated Metal Strip Construction since 1915.

ASSOCIATED COMPANY - THE STEEL WING CO. LTD.

### Blackburn

"The time is very near at hand when air travel will take rank not merely as the quickest means of getting from one place to another for business purposes, but as a safe, comfortable and thoroughly enjoyable method of seeing the world." (Sir Philip Sassoon in "To the East by Air" on a Blackburn lris flying boat-Airways, January 1929.)

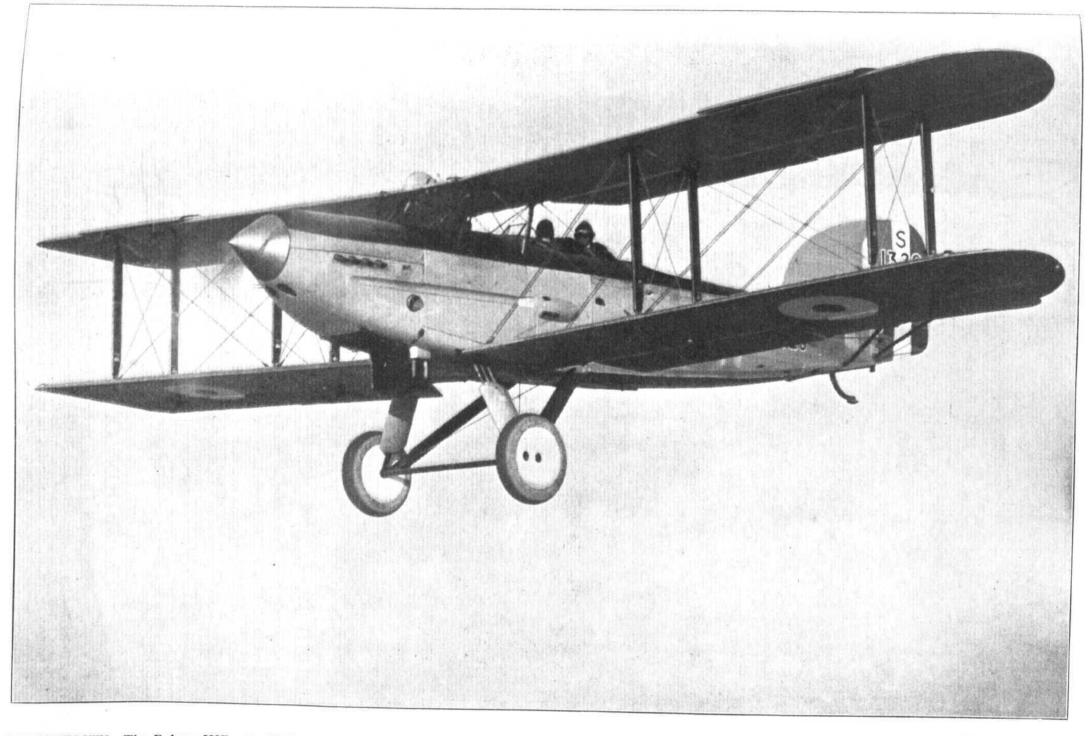


GARDINER,

THE BLACKBURN AEROPLANE AND MOTOR COMPANY LIMITED Head Offices and Works: BROUGH, EAST YORKSHIRE.

London Office: AMBERLEY HOUSE, NORFOLK STREET, STRAND, W.C.2.

G.1



VERSATILITY: The Fairey IIIF, of which this is an aerial photograph, is produced as a General Purpose aircraft, as a Bomber, as a Fleet Reconnaissance three-seater, and as a Seaplane. Moreover, it has been fitted successfully with a variety of engines, water-cooled and air-cooled. This particular one has a Napier "Lion."

### PRIVATE



### FLYING

A Section of FLIGHT in the Interests of the Private Owner, Owner-Pilot, and Club Member

#### SOME RECENT PRIVATE AIR TOURS

Pilgrims of the Continent

DOWNES SHAW, Chairman of the Bristol and Wessex Aeroplane Club, has just completed an air tour over France and Spain, ranging over 3,500 miles. He started solo three weeks ago in his own "Cirrus-Moth," and completed about 50 flying hours. Incidentally, he met many fellow tourists en route, including Capt. Bailey of Cardiff, Capt. W. L. Hope, Capt. and Mrs. De Havilland, Mr. Guinness, and the Austrian Archdukes: Anthony and Francis Joseph. He flew via Paris, Marseilles, Lyons, Barcelona, Carcassone, Bordeaux, and back again via Paris. His impressions were that air touring was encouraged on the Continent where, for instance, the landing fee, which covered two nights' housing, was only ninepence. Mr. Downes Shaw



Mr. John Scott-Taggart, the private owner-pilot of a Gipsy-Moth.

has made previous air tours of the Continent, which were recorded in our columns.

Of the tourists mentioned above, all of whom were on D.H. "Moths," Capt. W. R. Bailey was engaged on a tour of Switzerland and the South of France in his Coupé "Gipsy-Moth," with F./O. R. L. R. Atcherley. The Austrian Archdukes were flying their "Gipsy-Moth" and were reported at Barcelona on April 3. They had had a forced landing on the way owing to heavy fog, but after waiting in a field for three hours they were able to resume.

Private Owner's Curious Mishap

In a recent issue of FLIGHT we gave brief particulars of Mr. John Scott-Taggart's air tour to Switzerland in his "Gipsy-Moth." He completed it recently with a flight "Gipsy-Moth." He completed it recently with a flight from Switzerland to Bolton, but, unfortunately, it terminated with a slight mishap, for which he is not much the worse. He had flown from Lausanne via Basle, Frankfurt, Cologne, Brussels and Stag Lane Aerodrome, having covered 3,000 miles, and had previously arranged for his landing field in Bolton. On arriving there, on April 3, he found that the landing T was not laid down, but there was a man holding a white flag to indicate the direction of the wind. tunately, he was standing along the line of landing near the centre of the field, and did not seem to realise it. Mr. Scott-Taggart made a trial approach and motioned the man away, but, states a correspondent, writing to us about the incident, although the man was familiar with aerodrome procedure, he did not move as the machine again approached.

Apparently, Mr. Scott-Taggart had to raise the nose of his machine to clear him, and in the awkward predicament which followed he could not help hitting some trees and diving into a garden. He suffered a fractured rib and minor injuries, but in spite of his condition, he attended the wedding of his sister-in-law, for which purpose he had flown from Switzerland.

Mr. Scott-Taggart, who is the wireless expert, hopes to leave for the United States shortly for a flying tour. He has been in consultation with Short Bros., of Rochester, concerning the production of special amphibian gear for his machine.

London to South Africa

The flight of Sqdn.-Ldr. L. H. Slatter in a Blackburn "Bluebird ("Gipsy" engine) from London to South Africa is proceeding smoothly and quickly. He flew the course via the North African Coast and Cairo. On April 6 he had left Nairobi for a further stage. In a communication from him on March 27, written in Alexandria, he mentioned that he arrived there in good order, and remarked that the "Gipsy" engine was doing very well indeed, giving absolutely no trouble whatever. He also stated that Mrs. Spencer-Cleaver's "Gipsy-Moth," piloted by Capt. D. Drew, was functioning satisfactorily, and that Mrs. Cleaver was already very enthusiastic about air travel. She commenced her tour from England on March 7.

A tour of which mention has been made briefly by the daily Press is that of Flying Officer L. C. L. Murray and his wife in a "Gipsy-Moth," from Peshawar to Melbourne. They reached Batavia, Dutch East Indies, about April 5. This machine is fitted with a 15-gallon auxiliary tank.

Gazelle Shooting from the Air

The Vicomte and Vicomtesse de Sibour are still on their world tour in the "Gipsy-Moth." They were delayed for some time at Baghdad owing to very bad weather, and the Vicomte, who is a fine shot, had considerable sport shooting gazelles from the air. With a R.A.F. officer, he flew into the desert and sighted the quarry about 50 miles from Baghdad, scattered in small groups. Whilst the pilot from Baghdad, scattered in small groups. Whilst the pilot dived on them the Vicomte took aim, but only scared the prey and nearly fell out. The first day was not a good testimony to the marksmanship, but the second day's sport produced two fine specimens.

#### EXHIBITION OF MODEL AIRCRAFT

Royal United Service Institution's Collection

At the Royal United Service Institution Museum in Whitehall, S.W., there is a small exhibition of model aircraft. The models are faithful reproductions, manufactured in most instances by the constructors of the originals. This exhibition is but a small beginning of what will probably become a large model exhibition of all types of aircraft, ancient and

modern. The Air Ministry and the aircraft industry have been only too pleased to assist the Museum in increasing the collection and after the Olympia Aero Show this year it is expected that the Air Ministry's model exhibits will be loaned to the Museum.

At present there is a small range of seaplanes and flying



# Remarkable Endurance Test on Pratts

A convincing test of reliability has just been carried out by the De Havilland Company. Flying exclusively on Pratts, a standard Gipsy Moth machine has completed 25,344 miles at a speed of 88 m.p.h.

The engine was sealed by an official of the Air Ministry A.I.D., and remained untouched throughout the flight apart from routine attention and the changing of a magneto.

The petrol consumption, including warming-up, and many miles of taxying, worked out at 4.7 gallons per hour. Proof positive of the economy and absolute dependability of a famous engine and a famous spirit.

Speed and Security Depend upon Purity







Kindly mention "Flight" when corresponding with advertisers.

boats on show. They are placed in a row on a long table, but the Museum hopes to instal them in a flying attitude within easy view. There are models of the Blackburn "Iris" (3 Rolls Royce "Condor" engines); the Short "Calcutta" (3 Bristol "Jupiters"); the Supermarine "Southampton" (2 Napier "Lions"); a 1918 F5 flying-boat (2 Liberty engines); and a 1913 Sopwith Bat-Boat (Austro-Daimler engine) built up with a Saunders' racing boat hull. This group gives the public a good impression of the progress of flying-boat design. In the window of the Museum facing Whitehall is a model of a Supermarine "Seagull" (Napier " Lion ").

Everyone is familiar with the Short "Calcutta," through the beginning of the Empire air route to India, and with the Supermarine "Southampton," through the great R.A.F. cruise to Singapore and Australia, whilst the Blackburn "Iris" model will readily recall the flights of Sir Samuel Hoare to the Baltic and of Sir Philip Sassoon to the

Last.

Amongst the seaplane models on view is one of the Supermarine-Napier S5, the racing seaplane which won the Schneider Trophy in 1927, and in which Flt. Lieut. D'Arcy Grieg put up his speed of 319·5 m.p.h. There is the Fairey IIIF (Napier "Lion") three-seater reconnaissance machine, a Blackburn "Ripon" (Napier "Lion") two-seater torpedo plane, and one of the old Short seaplanes which was in use so extensively during the war for scaplane patrols.

A real aeroplane cockpit, completely equipped with the joy-stick, rudder, throttles and instruments, is installed on Above it is suspended a model machine connected the floor. to the real controls below with small cables running through This model answers to movements on the joy a frame. stick and rudder in correct fashion, and thereby enables a visitor to learn by actual practice how an aeroplane is controlled. A list of instructions guides him through all the normal movements. This is a most instructive feature of the exhibition, and, incidentally, very popular with the visitors; particularly the juveniles!

London Aeroplane Club, Stag Lane, Edgware, Sec., H. E. Perrin, 3, Clifford Street, London, W.1.

Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Major G. S. Cooper, The Aerodrome, Patchway, Glos.

Cinque Ports Flying Club, Lympne, Hythe, Hon. Secretary, R. Dallas Brett, 114, High Street, Hythe, Kent.

Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.

Lancashire Aero Club, Woodford, Lancs. Secretary, Mr. Atherton, Avro Aerodrome, Woodford.

Liverpool and District Aero Club, Hooton, Cheshire. Hon. Secretary, Capt. Ellis, Hooton Aerodrome.

Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, J. T. Dodds, Cramlington Aerodrome, Northumberland.

Norfolk and Norwich Aero Club, Mousehold, Norwich. Secretary, G. McEwen, The Aerodrome, Mousehold, Norwich.

Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., 30, Park Row, Nottingham. Hon. Secretary, Cecil R. Sands, McC.A., 30, Park Row, Nottingham.

The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, George Baldwin, Moorpark Aerodrome, Renfrew.

Southern Aero Club, Shoreham, Sussex. Secretary, Miss N. B. Birkett, Shoreham Aerodrome, Sussex.

Suffolk Aeroplane Club, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col, Walker, The Aerodrome, Sherburn-in-Elmet.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, York Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

#### LONDON AEROPLANE CLUB

(APR. 1-7).—Pilot instructors: Capt. V. H. Baker, M.C., A.F.C.; Capt. F. R. Matthews. Ground engineers: C. Humphreys, A. E. Mitchell. Aircraft: The following machines were in commission: G-FBNS, G-AABL and G-EBZC.

and G-EBZC.

The total flying time for the week was 49 hrs. 10 mins. Dual instruction: 28 members received dual instruction, the time being 26 hrs. 40 mins. Solo flying: 24 members flew solo during the week, the time being 22 hrs 30 mins. Mr. G. Lyon made his first solo ascent.

On Saturday and Sunday, with the three machines available, the Club was able to do 37 hrs. flying, soloists being particularly busy, numbering 49. "A" Licences.—W. E. Thorne, G. E. Clair and A. M. Leonard passed the qualifying tests for their Aviators' Certificates.

Club-house.—The Club-house is proving exceedingly popular and the number of luncheons and teas served show a very satisfactory increase. The receipts from the Club-house during the month of March totalled £160.

Club-kouse Furnishing Fund.—The following donation has been received: Mr. H. W. Giers, 10s. 6d.

New Club Machines.—The Club hopes, during the week, to take delivery of two D.H. Gipsy "Moths." One of these is the machine presented to the Club by Mr. J. Scott-Taggart.

of two D.H. Gipsy "Moths."

#### BRISTOL & WESSEX AEROPLANE CLUB, LTD.

BRISTOL & WESSEX ABROPLANE CLUB, LTD.

(MAR. 29-Apr. 6).—Pilot instructor: E. B. W. Bartlett. Ground engineers.

A. W. Webb. Machines in commission (3): YH, TV, YL. Total flying time, 40 hrs. 35 mins. Pupils under instruction (13): 29 hrs. 25 mins. Soloists under instruction: (6): 14 hrs. 40 mins. "A" pilots flying: (10) 8 hrs. 40 mins. Passengers (30): 6 hrs. Test flights (18): 2 hrs.

Apr. 7.—We were delighted vesterday to welcome back Mr. Downes-Shaw on ST after a three weeks' trip through France and cruising round spain. His experiences were thrilling as well as most interesting. Solo throughout the journey, his story will make excellent reading when he has compiled it from his diary. Enterprise and initiative of this kind would be well followed. We have another item of outstanding interest of which the Club is very proud. Miss O. M. T. Miles recently ordered a Gipsy Moth. She took delivery yesterday, and although she had done all her training on a Cirrus Moth, and had had the minimum of cross-country training, she made the flight from Stag Lane to Bristol in excellent time and without hesitation. A real good show, We have all been working overtime recently and Mr. Tratman very kindly came to our assistance in training. Mr. C. S. Napier arrived yesterday in his Gipsy Widgeon, and we were very pleased to see Mr. Faurweather of the Scottish Club, on his Gipsy Moth on his way to Glasgow, and Mr. Lee in his Avro Avian. Our "Brownie" is now in commission for the summer months, and we hope that our "Pixie" will soon join it. We again remind all private owners and any Club members who wish to enter on their Club machines that the competition for the "Deprez" Challeage Cup takes place here on May 26. We congratulate Sirdar D. B. Singh and Mr. H. O. Keeling, on excellent displays in passing their "A." Mr. R. A. F. Farquharson dealt with his height test very kindly, perhaps the initials helped 'We find that we were not alone recently with our magneto troubles, others having had identical experiences, but no explanati

#### CINQUE PORTS FLYING CLUB

CINQUE PORTS FLYING CLUB

[Mar. 24-30].—Pilot instructor: Maj. H. G. Travers, D.S.C. Ground
Digineer: Mr. R. H. Wynne. Machines: RI and NN. Total flying time
for week: 4 hrs. 40 mins. Dual instruction: Mr. Worsell, 15 mins.; Mrs.
Travers, 15 mins. Total, 2 members, 30 mins. "A" pilots: Mr. Worsell,
15 mins.; Mr. Somerset, 30 mins. Total, 2 members, 45 mins. Joyrides:
hrs. 10 mins. Tests: (3) 15 mins.
Flying was much interfered with during this week by the preparations
for the Easter Meeting and by the unfortunate accident on Wednesday to

G-EBNN, already reported. The Easter Flying Meeting proved a success financially, although the attendance was a little disappointing. The Club would like to take this opportunity of expressing their great gratitude to the large number of pilots who supported the Meeting, and especially to Herr Kirsch and to the members of the Rotterdam Aero Club who came such a long way to attend. The Club would also like to thank the many other people who assisted in the organization and generally helped to make the Meeting a success.

(MAR, 31–Apr. 6).—Apart from a test of RI on Monday by Mr. Ballantine, no flying was possible during this week because Major Travers had not quite recovered from the cut lip he received in the accident to NN. However, our private owner-members were very active. Mr. H. R. Law was delayed in starting his trip to Cornwall, on account of an Avian which had attended the Flying Meeting, taxying into his Moth YJ on the aerodrome, which was very hard luck.

Mr. G. E. F. Story, of Hythe, put up a magnificent performance on Bank Holiday, when he flew his recently acquired Moth TZ with Mr. Maurice Braddell (one of our recent "A" licences), as passenger to Conington, and won the Suffolk Club's Rally. This was Mr. Story's second cross-country flight and was made in very bad weather which deterred experienced pilots from going to Conington. Mr. Story successfully brought the machine back to Lympne in the evening, and has since successfully accomplished flights to Hadleigh and Bristol.

Mr. Douglas has been very active with his D.H. 53 XM, and successfully accomplished a forced landing last week.

accomplished a forced landing last week.

#### HAMPSHIRE AEROPLANE CLUB

(Mar. 30-Apr. 5).—Pilot instructors: F. Lt. F. A. Swoffer, M.B.E. and Mr. W. H. Dudley. Ground engineers: Mr. E. Lenny and Mr. I. Elliotz. Aircraft: D.H. 60 Moth G-EBOI and Avro Avian G-EBVI. Flying time for the week, 31 hrs. 45 mins. Pupils under instruction (14), 15 hrs. 50 mins. Soloists (2), 4 hrs. 20 mins. "A" pilots (9): 7 hrs. Passengers (4): 50 mins. Instructors (solo and tests) (13), 3 hrs. 45 mins.

Two new Members have joined the Club, Lord Carlow and Mr. Steggall. Mr. Storey and Lts. Robinson and Schreiber have completed the tests for their "A" licences.

During March, 8 members passed the tests for "A" licences. We understand that at least one of these members is endeavouring to complete 20 hrs. solo flying as soon as possible in order to qualify for passenger carrying. He has stated that his first passenger will be his wife, which seems hardly fair to the latter. In this connection, he might be interested to know that a member who obtained his licence in September last, formed a similar wish. In due course he took his wife for a flight. Without passing any comments whatsoever, one has noticed that the lady has not left the ground since.

#### MIDLAND AERO CLUB

(Mar. 31-April 6).—The total flying time was 34 hrs. 51 mins. Dual, 10 hrs. 45 mins. Solo, 15 hrs. 35 mins; passenger, 7 hrs. 45 mins; test, 46 mins.

46 mins.
The following members were given dual instruction by Flight-Lieut. T. Rose, D.F.C., and Mr. W. H. Sutcliffe:—G. P. Haylock, P. B. Hackett, J. H. Stevens, M. Turner, H. Coleman, H. J. Barnett, C. T. Davis, L. W. Farrer, N. B. Tompson, H. Beamish, G. C. Harris, J. A. Ridsdale.
Advanced dual: S. G. Hall, S. Duckitt, F. J. Steward, A. B. Gibbons,

Farrer, N. B. Tompson, H. Beamish, G. C. Harris, J. A. Ridsdale, Advanced dual: S. G. Hall, S. Duckitt, F. J. Steward, A. B. Gibbons, S. H. Smith, W. Swann, "A" pilots: E. P. Lane, W. Swann, R. C. Baxter, Wm. Morris, J. Rowley, S. H. Smith, R. D. Bednell, C. W. R. Gleeson, J. K. Morton, S. Duckitt, E. D. Wynn, A. B. Gibbons, J. Cobb, A. Ellison, W. L. Handley, G. V. Perry, S. G. Hall, H. J. Willis, C. W. Fellows. Soloist: J. H. Stevens. Passengers: Mrs. Griffin, K. S. Neale, Miss M. Pryce, W. Breedon, O. W. Banwell, H. F. Wilcoxon, Miss R. Toppin, G. Ellison, T. G. Ellison, T. W. Ashford. The total flying time for March was 124 hrs. 56 mins. (331 flights.)

#### THE NORTHAMPTONSHIRE AERO CLUB

(Mar. 24-30).—One Moth: G.-EBRX. Instructor: James Bunning. Ground engineer: J. Gallagher. We are able to report a good week's work. Our machine has been in commission continuously, and we have now 10 pupils under instruction. Mr. S. P. Tyzack again holds the week's record for greatest number of hours flown, having done 6 hrs. 55 mins. Total flying time for the week: 15 hrs. 40 mins., dual instruction. We have no solo pupils yet, but there are one or two likely people who may be launched at any moment.

#### LANCASHIRE AERO CLUB

(MAR. 24-30).—Flying time: 19 hrs. 20 mins. Instruction: (14); 6 hrs. 15 mins. Solo flights: (18), 10 hrs. 35 mins. Passenger flights: (5), 1 hr. 20 mins. Tests: (9), 1 hr. 10 mins.
Instruction—With Mr. Hall: Paddock, R. G. Davies, Garner, Stern, Hindley, W. Ashworth, J. H. Ashworth, Goss, Sellers, Eckersley, Whitehouse, Maxwell, Williamson, Shadwick.
Machines in commission: 2, MQ, EC.
Soloists (under instruction): Goss, Williamson, Sellers.
New flying member: Mr. Shadwick.
Pilots: Meads, Cohen, R. F. Hall, R. G. Davies, Mills, Can'rill, Lacayo, Harrison, Ruddy, Twemlow, Eckersley, Whitehouse, Garner, D. Nelson, Goodfellow.

Goodfellow.

Passengers—With Mr. Gort: Marples. With Mr. Hall: Miss Harpe With Mr. R. F. Hall,: Williamson. With Mr. Goodfellow: Mills. Wi Mr. Mills: Miss Marlow.

Mr. Shadwick commenced instruction during the week. A bad bree to be a second with the week. With

Mr. Snadwick commenced instruction during the week. A bad break in the weather and minor troubles with the machines kept flying hours down, and we just failed to top the hundred hour mark for the month in consequence.

consequence.

(Mar. 31—April 6).—Flying time, 23 hrs. 50 mins. Instruction (4), 1 hr. 45 mins.; solo flights (23), 16 hrs. 10 mins.; passenger flights (14), 3 hrs. 10 mins.; tests (13), 2 hrs. 45 mins.
Instruction.—With Mr. Hall: Wilkinson, Paddock. Foote, Eckersley. Machines in commission: MQ, EC, XD. Soloists (under instruction): Williamson, Sellers.
Pilots: Cantrill, Mills, Gort, Whitehouse, Garner, Meads, Lacayo, Hardy, Hall, R. F., Eckersley, Goodfellow, Kay, Michelson, Williams, Chapman, Harrison, Weale, Crosthwaite, Davies, R. G., Twemlow, Gattrill.
Passengers: With Mr. Goodfellow: Mills, Scholes. With Mr. Chapman: Mills, Cantrill. With Mr. Twemlow: Gort, Hall, R. F. With Mr. Hall: Isaacs. With Mr. Lacayo: Hall. With Mr. Hall, R. F. Foote. With Mr. Mills: Kay, Vincent, Stern. With Mr. Gort: W. Gort. With Mr. Williams: Hazlewood.
The third Quarterly Competition for the Pemberton Trophy was held on

Millians: Hazlewood.

The third Quarterly Competition for the Pemberton Trophy was held on Saturday. The competition was open to ab initio trained "A" licence pilots of the club who have flown not less than five hours solo. Twenty entries were received, and there were no non-starters. A very close competition resulted in a tie between Mr. R. F. Hall (the holder) and Mr. K. Twemlow. On the fly-off Mr. Twemlow just won by a narrow margin.

As before, competitors had to land without engine from a height of 1,000 ft. over a tape 5 ft. high. and inside an area 500 ft. long by 150 ft. wide. Ten of the twenty competitors accomplished this in safety, and the general standard of flying showed a marked improvement. A new section was introduced in which each competitor had to get a machine into position, start it up, and test it out thoroughly on the ground as though preparatory to a cross-country flight. Details of the tests in this section will be published in this month's Elevator for the benefit of those who may be interested.

#### LIVERPOOL @ DISTRICT AERO CLUB

[MAR. 31-APR. 6].—Machines in commission: Avro Avians, WK, XX, ZM. Instructor: Flight-Lieut. J. B. Allan. Ground engineer: Mr. Howard Pixton. Flying time for week: 22 hrs. 40 mins. Dual pupils: (12), 12 hrs. 20 mins. Solo pupils: (4), 4 hrs. 10 mins. "A" pilots: (9), 3 hrs. 40 mins. Passenger flights: (8), 1 hr. 55 mins. Tests: (7), 35 mins. Messrs. J. C. Waller, W. P. Taylor and A. F. C. Henderson all successfully passed their practical tests for aviators' certificates during the course of this week, and unfortunately the bar was closed on each occasion. Mr. Waller did not take "Ustace" (his pet umbrella) with him. These aviators are devils!!

#### SCOTTISH FLYING CLUB, LTD.

(MAR. 17-April 6).—Chief instructor: R. M. Stirling, A.F.C. Ground engineer: W. A. Calder. Machines in commission during period: X Moths YG, UX and WI. Dual instruction: 23 hrs. 45 mins. Solo flying: 18 hrs. 45 mins. Passenger flying: 17 hrs. 40 mins. Tests: 4 hrs. 25 mins. Total: 64 hrs. 35 mins.

45 mins. Passenger flying: 17 hrs. 40 mins. Tests: 4 hrs. 25 mins. Total: 64 hrs. 35 mins.

Instruction (with Mr. Stirling): Messrs. A. Walter, A. McIlwaine, J. E. R. Young, D. A. Graham, R. Allan, D. K. Fairweather, P. Du Cane, D. D. Thomson, D. Gardner, H. E. Fairley, G. C. Forsyth, G. E. Muir, J. C. McDougall, R. Y. Dickson, G. F. Yuill, A. C. Jack, W. Ledlie, A. C. Smith, J. W. Harrington and Miss E. A. Anderson.

The much-improved weather of late is pleasantly reflected in our better flying time, which, for the first time this year has almost returned to normal. After many weeks of waiting and disappointments several of our lately recruited pilot members have at last, been able to proceed with, more or less, regular tuition, and have made such satisfactory progress that we look forward to reporting quite a few first solos and "A" licences tests at an early date. Apart from a cross-country flight to Fife by Mr. J. Wood Harrington in UX, on March 26, there has been little flying by members outwith the normal routine, although on Saturday, April 6, Mr. Stirling rather strikingly demonstrated the utility of the light acroplane by ferrying a gentleman to Islay in just over an hour, as compared with the twelve to fourteen hours taken by the coasting steamers to reach the western isle. On Thursday, March 4, Mr. Stirling's passenger to Edinburgh on the weekly visit was Mr. James Gray, who, at 77 years, is probably our oldest and certainly one of our most enthusiastic members.

The grant made to the Club by the Air League of the British Empire in connection with the training of a lady pilot has been awarded to Miss Elizabeth A. R. Anderson, Verreville, Lenzie, to whom our congratulations are extended. Miss Anderson commenced instruction on March 27, and has already completed several hours' dual.

We were delighted to welcome our old friend of the council-table, Captain A. N. Kingwill, on Wednesday, April 3, when he arrived in charge of G-EBWI, supplied to us in relacement of G-EBVI.

#### SOUTHERN AERO CLUB

F. (APRIL 1-7).—The fine weather at the week-end was responsible for plenty of activity and a good many members turned up for instruction.

During the week Mr. T. Neville Stack visited us on UF. On Sunday, the Rev. F. Simpson, of Trinity College, Cambridge, landed here on his Gipsy\_Moth, AAEN, piloted by Mr. D. A. Boyle.

#### SUFFOLK @ EASTERN COUNTIES AEROPLANE CLUB

(Mar. 31-April. 6).—Chief Instructor: G. E. Lowdell, A.F.M. Assistant Instructor: Captain G. A. Pennington. Ground engineer: E. Mayhew. Aircraft: Four Blackburn "Bluebirds," RE, SZ, UH and ABB. Acrodromes: Hadleigh, Suffolk and Conington, Cambs. Seaplane Base: Brightlingsea, Essex. Flying time for week, 18 hrs. 55 mins., by Suffolk and Cambridge Clubs as follows:—

Suffolk Aero Club.—Flying time: 6 hrs. 35 mins. Three members were given dual instruction (1 hr. 55 mins.). Flights were made by three "A and B" licence pilots (4 hrs. 10 mins.). Six tests were made (40 mins.).

Captain Garland, a new member started instruction during the week. Bad weather and the reorganisation scheme necessitated by the permanent opening of the Cambridge branch has greatly reduced the flying time at Hadleigh. The secretary having spent most of the week at Cambridge has now a heap of correspondence to deal with, including many enquiries regarding membership. He offers his apologies for the consequent delay in answering.

regarding membership. He offers his apologies for the consequent delay in answering.

Cambridge Aero Club.—The display to mark the opening of this branch was marred by the worst possible weather. Our thanks are due to those hardy pilots who braved the elements to come to Conington to support us. Flying time: 12 hrs. 15 mins. Four members were given dual (55 mins.). One member flew solo under instruction (15 mins.). Flights were made by six "A and B" licence pilots (7 hrs. 50 mins.). Three passengers were carried (3 hrs.). Three tests were made (15 mins.).

Although, as promised, facilities for flying were available at Conington on every day except Friday, the weather only permitted flying on Thursday and Saturday. Several new members started instruction, and a large number enrolled at the display and on Saturday. It is hoped to erect a shed before many weeks have passed, and to station an instructor and ground engineer at Cambridge permanently. Two new "Bluebirds" have been acquired to meet the demands of the Cambridge branch. The first has been delivered, and the second will arrive as soon as the shed is ready. All this has been done out of the funds of the Suffolk club, and it is hoped that Cambridge will respond to this effort to supply flying facilities in their midst by supporting the branch both with donations and by joining up.

The Marine Aero Club.—An order has been given for a "Bluebird" seaplane, which should be delivered in time to start flying at Brightlingsea on June 1. This branch will only be open to "A" licence pilots, but those who wish to fly seaplanes may join up now and be trained at Hadleigh or Cambridge.

#### YORKSHIRE AEROPLANE CLUB

(MAR. 24-30).—Pilot instructor: Flight-Lieut. H. V. Worrall. Ground engineer: R. Morris. Assistant ground engineer: G. Speight. Machines in commission: 3 (SV, RF and BD). Flying time: 21 hrs. 15 mins. Instruction: (5), 6 hrs. 5 mins. "A" pilots: (7), 14 hrs. 40 mins. Passengers (3), 30 mins. Mr. Geoffrey Ambler flew to Torquay and back in his Moth

#### FROM THE FLYING SCHOOLS Brooklands School of Flying, Brooklands Aerodrome

Brooklands School of Flying, Brooklands Aerodrome

\* (Mar. 25-Apr. 7).—Instructors: Capt. H. D. Davis, A.F.C.; Capt. E. A. Jones; Major C. M. Pickthorn, M.C., and J. M. Oliver. Total flying time: 84 hrs. During the two weeks we carried 600 passengers.

Mr. Wyllie completed his "B" Licence tests on Wednesday, March 27. when he did his night flying successfully. On Friday, April 5, Mr. K. G. Murray set off for Nairobi on his Moth G-EBWA, which had first been specially prepared by us for the journey; he was sent upon his way by the School to the accompaniment of that well-known "POP" that so many of us like to hear. We wish him all success on his journey.

We now have an interesting collection of machines in our hangars, what with Avros, Moths, Avians and Widgeons and others, and one has many unbiased opinions of their respective merits from our instructors, who sample every new machine that arrives.

Mr. Wetton has completed his "A" licence tests very successfully.

We congratulate both our Indian and Chinese pupils, Mr. Bharucha and Mr. Lee, doing their first solos on the Schoool machines in faultless style.

We welcome the following new pupils:—S. A. Jones, B. Shayer, Hanson and Andrews.

#### Henderson Flying School, Croydon Aerodrome

(Mar. 24-30).—An amazing performance by the Indian gentleman previously referred to was accomplished during the month.

In 25 days he completed 42 hrs.' solo, including all his technical examinations, cross-country, height and night flying tests without damage.

Congratulations to an altogether exceptional pupil, who appeared to have no hope whatsoever of passing his tests when he first applied to Col. Henderson for tuition.

It is interesting to note that the inclusive charge for the whole course amounts to £132, including insurance—and as petrol and oil amount, roughly to 10s. per hour, a margin of £111 remains to the "firm" which spent most of its time watching and waiting—an inexpensive form of amusement except during "opening" hours.

Pupils wishing to qualify in the future are invited to note these very

Pupils wishing to qualify in the future are invited to note these very

Pupils wishing to qualify in the future are invited facts.

Mr. Daniel, from Baghdad, also completed all tests in excellent form.

Seven pupils completed "B" licence night-flying tests, and three othersheight and cross-country flights.

The "firm" promised G-EBVK a rest at Easter, but at the moment of writing the promise seems hard to keep, as at present 19 "A" Licence pupils are under instruction. The Avro will be back this week to give a

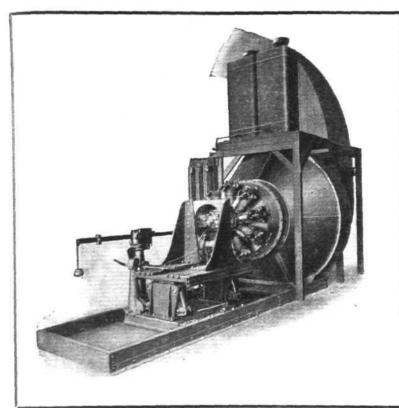
#### Surrey Flying Services School of Flying, Croydon Aerodrome

Surrey Flying Services School of Flying, Croydon Aerodrome

(Mar. 24-Apr. 6).—Instructor: J. J. Flynn. Ground engineers: F. A. Kent and R. Fox. Aircraft (2): BW and VA. Flying time: 52 hrs. 40 min. Passengers carried, 1,152.

During the past two weeks we have not done a very large amount of dua most of the school flying time has been taken up in solo flying. Messrs Briggs, Brunning, Brown, Brodie, Rogers, Masters and Lister have all completed some solo flying, and Mr. John Briggs, together with Mr. Rogerhave both completed their tests for the "A" licence. Mr. Brunning and Mr. Brown are both ready for their tests, and will complete them as soon as either finds time to get to Croydon. New pupils for the week all Mrs. Briggs, Mrs. Horsey, and Messrs. Nils Mark and S. Gerrard.

Mr. Rogers has completed a number of hours' solo flying on his Avian and this machine was used for a flight to Tangmere Acrodrome with Mr. Flynn as pilot. Joy-riding has kept our pilots very busy, and another was described in the second of the second of



# THE "HEENAN-FELL" PATENT VARIABLE AIR BRAKE DYNAMOMETER

(As used by the British Air Ministry, etc.)

Specially designed for the production testing of Aero Engines running at substantially similar speeds of airscrew shaft.

This apparatus supplies an air blast of sufficient volume and velocity to ventilate air-cooled engines without requiring the expenditure of power from any external source.

Simultaneously it measures the power developed by the engine undergoing test with the same degree of accuracy as offered by the "Froude" system.

If professionally interested, send for free copy of illustrated Catalogue No. 80.

**Heenan & Froude Ltd** 

Worcester

**England** 



TRIPLEX SAFETY GLASS CO., LTD., 1, ALBEMARLE STREET, LONDON, W.1.

# HANDLEY PAGE AUTOMATIC SLOT CONTROL

"Although the HANDLEY PAGE AUTOMATIC SLOT DEVICE remains an extra, it is significant that without one exception every 'Moth' which is now on order is to be fitted with the gear."

"CANADIAN AIR REVIEW."

December, 1928.

HANDLEY PAGE, LTD. CRICKLEWOOD, LONDON, N.W.2.

## 40% lighter than Aluminium

That is one of the features of our MAGNESIUM ALLOYS—another is their excellent physical properties. These factors make the MAGNESIUM ALLOYS peculiarly suitable for numerous parts in Aircraft and Automobile work.

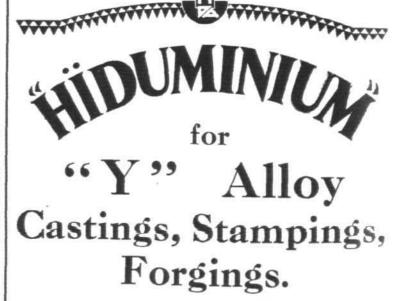
The Alloys can be supplied in the form of Castings, Forgings, Extrusions, etc.

PLEASE WRITE US FOR ALL PARTICULARS.



Point Pleasant, Wandsworth, LONDON, S.W.18.

Telegrams : "Ognesiuma, Put, London." Telephone: Putney 4807.



Stampings and Castings to all light alloy B.E.S.A. Specifications.



Largest suppliers of "Y" alloy in Europe.

### HANDLING AND MOORING OF AIRSHIPS

Lecture Delivered before the R.Ae. Society by Maj. G. H. Scott

W<sup>E</sup> give below a summary of the very interesting lecture on "Handling and Mooring of Airships," delivered by Maj. G. H. Scott on April 4, before the Royal Aeronautical Society and Inst. of Aeronautical Engineers.

In his opening remarks, Maj. Scott considered the essential requirements and limitations existing. Although, he said, the hull of an airship was strong enough to withstand the wind pressure, any restriction to free motion must be exerted at individual points on the hull, and the principal problem facing the designer was the distribution of the local load exerted at those points—either by the mooring tower, the guy ropes, or other devices—through the members of the structure in order to counter the wind pressure exerted over the large surface of the hull or fins, and the limiting factor was largely controlled by the amount of local load that could satisfactorily be dealt with.

Probably the easiest point at which to obtain real strength in the structure of an airship was the extreme nose, and this was one of the reasons why tower mooring, in which the airship was attached to the tower by the nose, would appear to be the logical method of mooring. It must not be assumed that the loads at the nose in tower mooring only affected the actual nose piece itself; the tower mooring condition actually controlled the design of the main framework of the airship for about one-third of its length from the bow aft. moored to a tower and allowed to swing freely in the wind, no other important external local loads were exerted on the airship.

When handling an airship on the ground it was necessary to manœuvre the ship into a position not in line with the wind, necessitating the exerting of external forces at points other than the nose, and to obtain the necessary local strength at those points was not so simple; there was also the problem of restricting vertical motion.

Handling In and Out of the Shed

In dealing with this section, Maj. Scott mentioned an article written by Prof. O. Krell, which dealt very fully with many types of sheds. One noticeable fact in this article was that the whole question had been considered on the assumption that the lee doors of a shed were always used, whereas, in this country, the tendency had been to use the weather door, or where possible, to take an airship into the shed tail first and out bow first. Maj. Scott said there were many advantages in employing this method of handling, the most important being that the large fins of the airship, more particularly the top fin, were more affected by gusts and eddies than the bow. Another advantage was that, with the wind blowing at an angle to the shed, the airship was allowed to swing about the bow into the wind as soon as clear of the shed, and if handled bow first she would swing away from the shed, whereas, if handled stern first, she would swing towards the shed

Maj. Scott next dealt with the various types of sheds, and regarding revolving sheds, he stated that there was no doubt that they considerably facilitated the handling of airships, but largely due to their big initial cost no attempt had been made to construct one since the war. The introduction of the mooring tower had removed the necessity of a revolving shed, as an airship could moor and await suitable weather to enter the shed. In his opinion, with airships of the size of R.100 and R.101 and upwards, it would be practically impossible to handle them on the ground or in and out of the sheds, except in light winds whose direction was up and down the shed, and not at all in winds that had any appreciable component across the shed. In this country handling had always been carried out by man power, no mechanical method having so far been adopted. The introduction of handling rails, as used in Germany and at Lakehurst, would appreciably reduce the number of landing party required, but would not permit of handling an airship in and out of a shed in increased wind velocities to any appreciable extent. The handling rail could, however, be accepted as a proved method and would probably be fitted to all operating sheds in the future, as where continuous operations or any considerable amount of handling had to take place, the saving in personnel would justify the expenditure on the rails, Maj. Scott then described the construction and operation of handling rails, and other methods of handling. One other method, under construction in the U.S.A., was a short mobile mooring mast consisting of a tripod stub mast with the three legs of the mast resting on caterpillar tractors. The proposed method of operation was to moor the airship

to the stub mast and then move the mast complete with airship into the shed, the after guys being manned by the landing party or attached to the trolleys of the handling There would appear to be a number of objections to such a scheme—any unevenness of the aerodrome would be magnified by the height of the mast and cause sudden acceleration or deceleration of the mooring point, which would put heavy stresses in the nose of the airship. This could probably be eliminated by substituting for the tractors, bogeys running on carefully laid down tracks.

As regards landing to a landing party, Maj. Scott thought that only one factor had been introduced in recent years, and that was the effect of increase of size. The principal effect of this increase was to reduce at any given velocity the dynamic forces on the airship as compared with her gross lift, and as variations in buoyancies due to variations in air temperature were proportional to the gross lift, either the pilot must accurately forecast these variations or land faster. must accurately forecast these variations or land faster. An endeavour to forecast more accurately the conditions was being made by fitting electrically recording thermometers in the meteorological hut, giving the temperature at two or more levels, and by improving the organization for the transmission of the information to the airship before landing, but even then it would probably be necessary to land the two new airships, the R.100 and R.101, faster than the older R.33

This introduced another point, owing to the good aerodynamic form of these ships compared with previous airships and their greatly reduced head resistance as compared with their gross weight. These two airships would maintain their air speed for a considerably greater time and distance than the previous airships. The necessity for ample astern power was therefore increased. That the necessity for astern power increased with the size of the airship was borne out by ast experience. With the small non-rigid airship of the Blimp and Coastal type, the necessity for astern power was never felt, as these airships could be landed comparatively slowly even in a dead calm and rapidly lost headway when the engine was stopped or slowed down. As size was increased it was found essential to fit astern power, and although rarely used in the 1,000,000 cub. ft. airships of the R.23 class, was almost invariably used in the better streamlined and larger

Another danger that became increasingly great as the size of airship increased was the danger of carrying away one or more members of the landing party, if the air ship was landed too light, as the amount of surplus buoyancy an airship should have when landing was roughly proportional to the gross lift. Therefore, with larger airships it became more and more essential to land to a mechanicallyoperated system such as a mooring tower. He thought the airship pilot of the future would look with horror at the idea of landing to a landing party; it was a manœuvre only to be carried out in cases of extreme emergency.

Mooring Towers Maj. Scott next turned to the mooring tower. Since he read his paper on the "Development of Airship Mooring," three years ago, new problems and new proposals had arisen. One of the most important was the American proposal of a short or stub mooring mast as opposed to the tall tower hitherto used. This proposal briefly consists in mooring an airship close to the ground with the nose of the ship received to a mast just sufficient height to keep the cars clear of the ground when on a horizontal keel, the cars being secured to trolleys or weighted bogeys so that they prevent any vertical motion of the tail. The advantages and disadvantages of the two systems, said Maj. Scott, were:

High Mast.—Advantages.—(a) Landing can be made pos-

sible with safety in comparatively bad weather. (b) Even in bad weather a party of 14 to 20 men is all that is required. (c) The airship can be slipped from the mast with safety in any weather. (d) It is easy to standardise it for a number of different sizes and shapes of airships.

Disadvantages.—(a) Difficulty of carrying out repairs to the outside of the circle and shapes.

the outside of the airship while moored, probably common to all types of mooring mast. (b) Strain on personnel if long periods of mooring are carried out, also common to all types, and can be largely overcome by having duplicated crews. (c) Danger of airship being driven down by snow.

Stub Mast.—Advantages.—(a) Certain types of repairs are probably more easily carried out than at a high mast.

(b) Airship not so likely to be driven down by snow as at a

high mast (see (e) below). (c) A temporary mast of this type is more easily erected than a temporary high mast.

Disadvantages.—(a) A full-sized landing party is still required. (b) Ship cannot slip in bad weather without risk of damage. (c) Standardisation of height of mast and diameter of tracks very difficult without putting serious restrictions on the airship designer both as to size and shape. (d) Landing cannot be attempted in bad weather. (e) Snow or frost may interfere with the free running of the trolley, which would bring excessive and dangerous loads on the ship's structure. This may be a more serious danger than that of being driven down by snow when moored at a high tower.

There was little doubt the U.S. Navy authorities intended

There was little doubt the U.S. Navy authorities intended continuing their stub mast experiments, and we would watch the results with interest, but, said Maj. Scott, unless some new factors arose, we could not see any necessity to modify the mooring policy as at present being developed in this country.

In conclusion, Maj. Scott said the mooring tower at Cardington had been completed for some time. The mooring tower in Egypt was also completed, and two new towers, one in India and one in Canada, were nearing completion. In the two last-named towers, although the principle of mooring was unaltered, the mechanical details of the head were an improvement on the Cardington and Egyptian towers, the head being operated pneumatically. Nothing but actual experience would answer many of the questions of airship handling and mooring, but he hoped before the end of the year we should have had a fair amount of experience and solved some of these problems.

# 

A LTHOUGH it was only a comparatively short while ago that Simmond's Aircraft, Ltd., of Weston, Southampton, joined the ranks of British Aircraft Constructors, this firm has made remarkable progress, and has already gained a favourable reputation regarding the "Spartan" light 'planes. "Spartans" are now

"Spartans" are now flying in America and Australia, and are well on their way to Canada, South Africa and New Zealand. A report has recently been received from America on the arrival of the first Spartan, when it was tested

tan, when it was tested by Major J. Sydney Owens, A.C., P.N.G. The Officer commanding the 28th Division. The following are extracts from his report:—

"The Spartan is a splendid little ship. It has a simply marvellous performance when consideration is given to the weight of the ship and the power available. I found I could hold it in the air very nicely doing approximately 60 to 65 m.p.h., with an engine speed just slightly over 1,400 r.p.m., and that full out it will go by a—as if the latter were standing still."

The first dozen "Spartan" machines have now been completed, and the second dozen is well in hand. The production has now reached nearly two hundred machines a year, and the firm is hoping to have during April and May



The Simmonds "Spartan" Light 'Plane, "Cirrus" Engine.

one or two machines available in stock for purchasers who require quick delivery. On account of the large number of orders now on hand, it became essential to increase the size of the works, and in the last week the floor space occupied has been more than doubled.

We understand the value of the Simmonds Interchangeable system of construction is being more and more appreciated at home and abroad, and the following extract from a letter recently received by the Simmonds Co. from an aircraft company operating in the other end of the Empire is significant:—

is significant:—
"Operating as we are a long distance from aircraft works, your system becomes very necessary if continuous and economical flying is required."

The New Road to the East

An air traveller's story of his experience on the Imperial Airways air service from Cairo to Basra has been published in a small book with good illustrations, and it can be obtained from Imperial Airways, Ltd., Publicity Dept., Croydon. It is called "The New Road to the East," and intending purchasers have only to send a twopenny stamp to cover postage. It gives just those natural impressions of the flight which the average passenger would receive, with brief reference to the towns on the route and their historical interest.

Air Minister's Assistant Private Secretary

THE Secretary of State for Air has appointed Mr. R. A. Butler to be his Assistant Private Secretary (unpaid).

A Leeds Extension

THE British Aluminium Co., Ltd., opened a new branch office and warehouse at 66, Kirkstall Road, Leeds, under the management of Mr. C. F. Batstone, on Monday, March 4. As at the other warehouses of the company, aluminium will be stocked in all their standard forms—ingot and semi-manufactured. The new telegraphic address will be "Aluminium Leeds," and telephone number 28,343, Leeds.

Air Cooling in Motor Cars

Considering the popularity of air cooling in the aviation world, it is somewhat surprising that greater strides have not

S (

been made with this form of cooling for motor cars. Mr. H. H. Franklin, builder of the first multiple-cylinder air-cooled motor-car engine and head of the firm which makes the Franklin air-cooled Six, is at present on a visit to London, and was asked to give his views. Mr. Franklin stated that the growing influence of aero engine practice on motor car construction was bound to make itself felt in this direction also, and with the fine originality and engineering skill of European designers now contributing further knowledge, he looked for developments which would ultimately revolutionise car design throughout the world. In this connection, it is not without interest to recall that in America the Franklin company has been building air-cooled car engines for 24 years.

28th Sqdn. (R.A.F.) Old Boys' Association

The above Association will be holding its half-yearly re-union on April 20 next. This will be a social, run on the usual lines that have always proved so enjoyable in the past, at Slater's Restaurant, High Holborn. Tickets, 3s. single, and 5s. 6d. double (including refreshments), may be had from the Hon. Secretary, C. T. Hodges, 102, Camden Street, N.W.1.

Change of Address
The Gloster Aircraft Co., Ltd., have now changed their
London office address. The new address is Byron House, St.
James Street, London, S.W.1.

# Over 25,000 Miles on a GIPSY-MOTH using



# Wakefield CASTROL XXL

In order to illustrate the depend-ability of the GIPSY engine, it was decided to undertake a prolonged test under everyday flying conditions.

Accordingly a standard Gipsy engine, selected at random, was installed in a standard Moth. Official co-operation was secured, and the engine was sealed by an official of the Air Ministry Aeronautical Inspection Directorate, and arrangements made for accurately recording under official observation all petrol and oil used.

A prolonged tour was commenced, at a constant cruising speed of 85 m.p.h. by Airspeed Indicator (checked at 88 m.p.h. ground speed), and the following is the log to date:

Total number of hours flown: 288. (25,344 miles at 88 m.p.h.)

Attention: Routine cleaning of filters and plugs and setting of tappet and magneto clearances, and other normal external adjustments, as advised in maker s handbook.

Replacement: One magneto of proprietary manufacture.

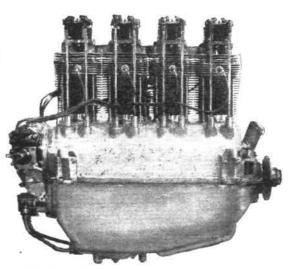
Oil Consumption: .37 pints per hour of Wakefield CASTROL

Apart from this attention the engine had not been touched.

The de Havilland Aircraft Co., Ltd., write-

"We may say that your oil has given satisfaction throughout the

THE REPORT OF THE PERSON OF TH



The famous Gipsy Engine. The de Havilland Air-craft Co., Ltd., Recommend and use CASTROL XXL in the Summer, CASTROL XL in Winter, and CASTROL R for racing purposes.

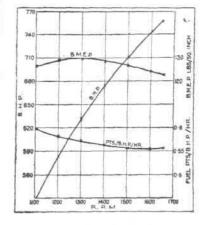
C. C. WAKEFIELD & CO., LTD., All-British Firm, Wakefield House, Cheapside, London E.C.2

# ECONOM

#### ARBURETTER

RIGHT: Graph showing Power, B.M.E.P. and Consumption Curves of the Armstrong-Siddeley 700-750 h.p. "Leopard" Aero Engine. Torque, in inchlbs., at any point equals 236× B.M.E.P. Maximum torque (at 1,300 r.p.m.) 30,584 inch-lbs. Note how the Claudel-Hobson Power Jet Carburetter fitted gives maximum power with economical cruising.

LEFT: Illustration showing the type AVT 100 Claudel-Hobson Carburetter compared with one of the same make as fitted to many cars.

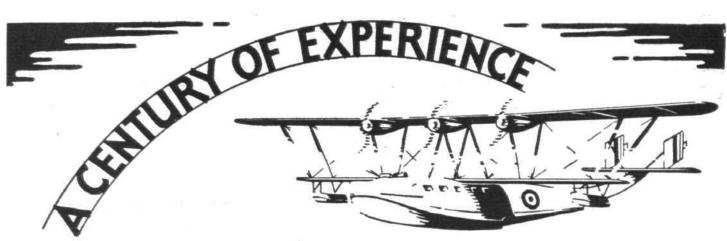


H. M. HOBSON LTD., 47-55, The Vale, Acton, London, W.3.

THEORY CHECKS CHICAGOS STREETS

A.J.W.

COLORED COLORED CALABIA COLORED



to a final transfer of the self-conferent transfer of the self-conference of the self-co

THERE is something extraordinarily good about the SAUNDERS design in marine aircraft—something that imparts to the machines the ability to perform quite as well as, or rather a little better than, most others of a like class. POSSIBLY it is due to the fact that the 1929 'SAUNDERS' flying-boats and amphibians are produced as the result of a century's experience in marine design; coupled with a thorough understanding of modern requirements.



Air Press Agency.

# S.E.SAUNDERS LTD.

Designers & Constructors of All Aircraft
EAST COWES I.W. BUSH HOUSE, LONDON W.C.2.



RUSSIAN OIL PRODUCTS LTD. MOORGATE HALL, LONDON, E.C.2.

PHONE: LONDON WALL 9204-5.

London Gazette, April 5, 1929.

Lt.-Comdr. R. C. Clavell, O.B.E., R.N., is granted a temp. commn. as Squadron Leader on being seconded for two years' duty with R.A.F. (March 16). Lt. G. R. M. Robertson, R.N., is re-attached to R.A.F. as Flying Officer, with effect from March 8, and with seny. of June 16, 1924 (substituted for Gazette, March 26). The follg. Pilot Officers are promoted to rank of Flying Officer:—D. T. Saville (Nov. 2, 1928); F. W. Murison (Jan. 18); L. V. Bennett (March 8), and with seny. of March 2; M. H. Clare (April 3). Flight Lt. A. T. Laing is placed on half-pay list, Scale B. March 20 to June 19, 1929, inclusive.

The follg, are transferred to the Reserve:—Class B.—Flying Officer L. P. Hirsh (April 1). Class C.—Flight Lt. W. E. G. Beauforte-Greenwood (March 30). Flight Lt. N. Comber is placed on retired list at his own request (April 1). The follg, relinquish their short service commns. on account of lil-health:—Flying/Officer C. W. Martin (March 27); Pilot Officer on probation R. J. Axten (April 3). The short service commn. of Pilot Officer on probation N. E. Whalley is terminated on cessation of duty (April 3). Squadron Leader V. A. L. Bradyll-Johnson (Lt. Comdr., R.N.), relinquishes his temp. commn. on return to Naval duty (March 30).

Medical Branch

Medical Branch

Medical Branch

The following Flying Officers are granted permanent commns. In this rank (April 3):—D. A. Wilson, F. E. Lipscomb. Squadron Leader J. R. Crelius, M.B. (retired list) is reinstated on active list as Squadron Leader with effect from and with seniority of March 15. Flight Lt. F. T. Boucher is

transferred to Reserve, Class D. ii. (April 2). B. L. Harrington (temp. Lt., General List, Army, Dental Surgeon) is granted a temp. commn. as Flying Officer (Dental) on attachment to R.A.F. (March 18).

Chaplains' Branch

The Rev. J. Firth, M.C., is granted the relative rank of Group Capt, on appointment as a Staff Chaplain (April 1); the Rev. S. J. Jones, M.C., relinquishes his short service commn. on completion of service (April 1).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The following are granted commns, in Class AA (ii.) as Pilot Officers on probation:—G. A. G. Bowden, R. P. Donnelly, J. G. G. Moore (March 18) W. R. Sadler, B. L. Macassey (March 20) W. M. Russell, H. C. S. Brand, K. R. Warton (March 21). Flight Lt. H. W. McKenna, D.C. M., is promoted to rank of Squadron Leader (April 1). The following Flying Officers are promoted to rank of Flight Lt. (April 1):—O. J. F. Jones-Lloyd, L. A. W. Deane, D. E. Hall, H. S. R. Burt, J. H. Page, R. S. Higgens, W. G. Nicholls, W. H. Stiles, E. J. H. Wright, A. H. C. A. Rawson, S. J. Stocks, J. B. Wilson, R. H. Stocken, T. A. Hale-Monro. Pilot Officer H. J. Padfield is promoted to rank of Flying Officer (March 31).

AUXILIARY AIR FORCE

General Duties Branch

No. 603 City of Edinburgh (Bombing) Squadron.—The folig. to be Pilot Officer:—S. Davidson (Feb. 3).

#### ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Air Commodores: R. H. Clark-Hall, C.M.G., D.S.O., to Air Ministry (Department of A.M.S.R.), on appointment as Director of Equipment; 15.3.29. A. M. Longmore, C.B., D.S.O., to H.Q., Inland Area, for duty as Chief Staff Officer; 15.3.29.

Wing Commanders: H. R. Nicholl, C.B.E., to Air Ministry (D. of T.), on appointment as Deputy Director of Training; 9.4.29. K. R. Park, M.C., D.F.C., to H.Q., Fighting Area, for Air Staff duties, vice Wing-Commander H. L. Reilly, D.S.O.; 16.3.29.

Squadron Leaders: J. A. Sadler, to No. 9 Scales

Commander H. L. Reilly, D.S.O.; 16.3.29.

Syuadron Leaders: J. A. Sadler, to No. 9 Sqdn., Manston; 24.3.29,
S.R. Watkins, A.F.C., to R.A.F. Depot, Uxbridge; 11.3.29. C. F. Gordon,
O.B.E., M.C., D.F.C., to R.A.F. Practice Camp, North Coates Fitties;
20.3.29. C. B. Cooke, to R.A.F. Practice Camp, Sutton Bridge; 25.3.29.
E. J. Cuckney, D.S.C., to No. 1 Flying Training Schl., Netheravon; 26.3.29.
Flight-Lieuts.: L. G. Le B. Croke, to 201 (F.B.) Sqdn., Calshot; 6.3.29.
L. G. Maxton, A.F.C., to 204 (F.B.) Sqdn., Cattewater; 7.3.29. E. S.
Moulton-Barrett, to 204 (F.B.) Sqdn., Cattewater; 7.3.29. A. J. Rankin,

0

#### IN PARLIAMENT

IN PARLIAMENT

Flying Clubs' Subsidies

Mr. Louis Smith, on March 27, asked the Secretary of State for Air whether it is now an accepted principle of the policy of his Department that no more subsidies should be granted to flying clubs; and, if not, whether he will consider the claims of Sheffield at an early date?

Sir Samuel Hoare: It is not so much a question of policy as of unavoidable financial limitation, and I am afraid that the money available for this purpose makes it impossible to add to the number of light aeroplane clubs already in receipt of subsidy.

Mr. Smith asked the exact nature of the benefits that will accrue to flying clubs becoming affiliated to National Flying Services, Ltd.; and whether these benefits will be the same for clubs that already receive the Government subsidy and for those that do not?

Sir S. Hoare: The exact nature of the benefits referred to will depend upon the arrangements which may be made between National Flying Services, Ltd., and the flying clubs, and I am not in a position to give any detailed information upon this subject. Speaking generally, however, I understand that it is the intention that affiliated clubs should have the use of all the aerodromes and landing grounds created by the company's central club should be available to members of the affiliated clubs. So far as I am aware, the benefits will be the same for all affiliated clubs, whether they have or have not been in receipt of Government subsidy.

Poisoned Fumes

Verning Syrpen asked what steps are being taken to remove the

Poisoned Fumes

Viscount Sandon asked what steps are being taken to remove the dangers, both as to the Royal Air Force and civil aviation, as revealed by the inquest on Flight-Sergeant Pearcy, who died during flight from poisoned

the inquest on Flight-Sergeant Pearcy, who died during flight from poisoned himes from his engine?

Sir S. Hoare: The accident referred to arose out of a most unusual combination of circumstances in connection with a particular form of apparatus for heating the cockpit from the exhaust. It is unlikely in the extreme that the same kind of accident would happen again, but in view of its possibility and in the interests of safety, I have had the use of this apparatus discontinued pending further experiments which are being undertaken for its improvement. The heating apparatus in use on civil different is of an entirely different design, and has given no trouble over a number of years.

#### 楽 PERSONALS

Married

FLIGHT-LIEUT. ERIC CHARLES DEARTH, R.A.F., son of Mr. and Mrs. Charles Dearth, of York, was married on April 2, at St. Wilfred's Church, North Muskham, Newark, to Margaret, second daughter of the late Canon Balladiev, Rector of Algarkirk, and Mrs. Ballachey, of Edgefield House, North On Argaret 19

Muskham.
On April 2, 1929, at St. Mary's, Trimley, Suffolk, RICHARD FOX, elder son of Mr. and Mrs. E. Fox Overbury of "Greenlands," Ashford, Middlesex, was married to Marjorte, elder daughter of Mr. and Mrs. B Temple Wrinch of Cordwyes," Trimley, Suffolk.
On March 23, at St. Luke's, Reading, "Harold James Penrose (Flying Officer, R.A.F.O.), elder son of Mr. and the late Mrs. J. Penrose, of Ipswich, was married to Nora Sybil, elder daughter of Mr. and Mrs. W. C. Bailey, of Reading.

to 19 Sqdn., Duxford; 15.3.29. J. H. Hargroves, to 502 Sqdn., Aldergrove; 4.4.29. H. L. Beatty, to 201 (F.B.) Sqdn., Calshot; 11.3.29. H. W. Heslop, to No. 24 Sqdn., Northolt; 24.3.29. H. T. Herring, to No. 33 Sqdn., Netheravon; 1.3.29. C. Crawford, to R.A.F. Practice Camp, Sutton Bridge; 20.3.20. G. H. Vasse, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. E. K. Blenkinsop, to No. 504 Sqdn., Hucknall; 11.4.29. F. G. S. Mitchell, to R.A.F. Depot, Uxbridge; 27.3.29. H. A. Haines, D.F.C., to H.Q., Iraq.; 23.3.29.

Flying Officers: W. E. Symonds, to Home Communication Flight, Hendon; 21.3.29. I. Hodgson, to R.A.F. Practice Camp, Catfoss; 25.3.29. P. G. Lucas, to Station H.Q., Donibristle; 26.3.29. J. C. K. Rogers, to 204 (F.B.) Sqdn., Cattewater; 7.3.29. N. A. West, to Armament and Gunnery Schl., Eastchurch; 27.3.29. E. M. Thompson, to R.A.F. Depot, Uxbridge; 16.2.29. R. C. Greenhalgh, to Armoured Car Wing, Iraq; 12.3.29. T. Marchant, to No. 1 Flying Training Schl., Netheravon; 28.3.29. J. Parsons, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. W. Morgan, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. J. McGuinness, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. S. Pritchard-Barrett, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. S. Pritchard-Barrett, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. S. Pritchard-Barrett, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. S. Pritchard-Barrett, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. S. Pritchard-Barrett, to R.A.F. Practice Camp, North Coates Fitties; 20.3.29. S. Pritchard-Barrett, to R.A.F. Practice Camp, Sutton Bridge; 20.3.29.

0 0

To be Married

The engagement is announced between Patrick E. Berryman, Flying Officer, R.A.F., only son of Mr. and Mrs. A. Cassels Berryman, of Anstey, Berkhamsted, Herts, and Miss Edith Kathleen (Kitty) Shipton, only daughter of the late Leonard Shipton, Ceylon Government Service, and Mrs. Shipton, of Bedford.

A marriage has been arranged between

Mrs. Shipton, of Bedford.
A marriage has been arranged between Flight-Lieutenant John Wyntoun Turton Jones, R.A.F., only son of Mr. and Mrs. Turton, of Boissiney Lodge, Tintagel, and Constance, only child of the late Mr. and Mrs. J. Lee Bradshaw, of Birkdale, Lancashire.

The engagement is announced between Athol Wordsworth Mylne, R.A.F., son of the late Bishop L. G. Mylne, D.D., and Mrs. Mylne, and Eleanora Constance, younger daughter of the late W. K. Adam, Resident Magistrate of Katanning, West Australia, and Mrs. Adam, Blair-Adam, Kinross-shire. Kinross-shire.

The engagement is announced between Group-Captain Eric Roper-Curzon Nanson, R.A.F., and Ina, only daughter of Mrs. Edward Foster, of 7, Bickenhall Mansions, W.1.

#### 1 285 湛

#### AIR MINISTRY NOTICES TO AIRMEN

Examinations for Air Navigators

1. An examination for 1st and 2nd Class Air Navigators' Licences will be held at the Air Ministry, Gwydyr House, Whitehall, on Monday, Tuesday and Wednesday, April 29 and 30, and May 1, 1929.

Candidates for the 1st Class licence will also be required to attend at Croydon Aerodrome on Thursday, May 2, 1929, for a practical examination in meteorology.

Application forms, the syllabi, and conditions of examination, may be obtained on application to the Secretary, Air Ministry (C.A.2), Gwydyr House, Whitehall, London S.W.1.

Formal application to sit at this examination must be made on form C.A.2C and, together with the prescribed fees, must be received at the above address not later than April 13, 1929. Candidates should give with their applications full details of any qualifications and experience they already possess.

Before a licence can be issued, candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical strangiation at the Canada and Canada and Canada and Candidates will have to pass a medical strangiation at the Canada and Candidates will have to pass a medical and Canada and Can

already possess.

Before a licence can be issued, candidates will have to pass a medical examination at the Central Medical Board, 3-4, Clement's Inn, London, W.C.2. In the case of candidates for 2nd Class Navigators' Licences, arrangements can be made for this examination to take place on May 1, 1929, if early application is made to be examined on that day. Special arrangements will be made for the medical examination of candidates for 1st Class Navigators' Licences.

2. In future, examinations will be held once every six months for 2nd Class licences, and once every twelve months for 1st Class licences. These examinations will take place at or about the end of March and the end of September in each year, the March examination being for 2nd Class licences only, and the September examination for both 2nd and 1st Class licences only, and the September examination for both 2nd and 1st Class licences.

The exact dates will be published as hitherto in Notices to Airmen, 3, All prospective candidates should note that after the April, 1929, examination it is intended to raise the fees to Two Guineas for the 2nd Class technical examination and to Five Guineas for the 1st Class technical examination.

(No. 22 of 1929.)

#### AIR POST STAMPS

By DOUGLAS ARMSTRONG (Editor of "The Stamp Collector") Retrospect

AERIAL progress in 1928 is indicated by the fact that no less than 115 new varieties of stamp for air postage were issued throughout the world, an increase of sixty upon the previous year. A considerable proportion of these originated through the opening up of new air post lines in South and Central America, including the Transatlantic Latecoere service between Toulouse and Buenos Aires, whilst others marked the course of Lindbergh's Goodwill flight through Central America and the West Indies. Seldom has popular interest in air post collecting been aroused to the same extent as by the special stamps issued by the German post office in connection with the Europe-America flight of the giant dirigible "Graf Zeppelin " in October last, with the consequence that letters bearing these picturesque vignettes already fetch comparatively high prices, notwithstanding the large numbers carried by this historic mail.

"Wright" Aeroplane Stamp
Air post collectors are not to lack for an appropriate souvenir of the Silver Jubilee of the aeroplane which was celebrated in England and America on December 17, 1928. The United States government rose nobly to the occasion with a pair of commemorative stamps, first issued at the International Civil Aeronautical Conference held in Washington by invitation of President Coolidge on the 12th, 13th and 14th of that month, the 2 cents denomination of which bears a picture of the original "Wright" aeroplane used for the first heavier-than-air flight at Kitty Hawk, N. Carolina, in 1903 and now preserved in the South Kensington Museum. The companion stamp, 5 cents blue, depicts a modern mono-plane in flight between the New World and the Old, thus contrasting the development of aviation in the past 25 years. For the trifling sum of 7 cents (U.S. currency), therefore, all who are interested in the rise of aerial power can possess these fascinating relics of the jubilee of flight.

South American Issues

From Chile comes news that owing to the suspension of the Santiago-Valparaiso air post service the aero stamps distinguished by the imprint of a "Condor" were withdrawn from circulation at the beginning of September, 1928, after having been in use for a little less than three months. This has always been a difficult set for collectors to obtain as only eight thousand are said to have been issued at all, exclusive of the two surcharged values which were withdrawn from circulation almost immediately and it is likely to prove a very sound investment, like several other recent South American series that have unexpectedly passed into obsolesence.

The Scadta Company of Colombia is gradually extending its operations to the neighbouring Latin American republics. Additional denominations of 40 and 80 centavos are reported as having been included in the semi-official Colombian set as from October, 1928, and now we have the 20 c. grey and 30 c. blue overprinted "ECUADOR—PROVISIONAL 1 Sucre" and "1½ Sucre" respectively in connection with the service lately inaugurated between Guayquil and Buenaventura. An experimental flight to Peru was successfully carried out and a further extension of the regular air post service may be

looked for in that direction in the near future.

An air mail service from Asuncion (Paraguay) to Buenos (Argentina) was due to commence operations in December, 1928, and special stamps foreshadowed in this connection. The present air post stamps of Uruguay are about to be replaced by a new issue in varied and more

picturesque designs.

From Bolivia comes a striking set of three particular air post stamps lithographed by the Imprensa Nacional with the badge of the Lloyd Aereo Boliviano (a subsidiary of the Deutsche Aero Lloyd) flanked by vignettes of native huts and palm trees on the one side and the Andes on the other. These are used to denote the supplementary air post fees payable to the operating concern comprising 15 centavos green, 20 c. blue and 35 c. carmine, of which the total printing amounted to 100,000, 150,000 and 300,000 respectively.

Persian Progress

Following on the improvisation of certain high value Fiscal stamps for air post purposes pending the arrival of the long promised new permanent series that is being printed in Holland, the lower values of the same series from 1 chahi up to 1 Kran, five in all, have been similarly distinguished and pressed into the service. Less than 5,000 sets are believed to have been overprinted and it is understood that they are not on sale to the public in the ordinary course, but are affixed by the postal officials themselves to letters handed over the counter for transmission by air post.

#### PUBLICATIONS RECEIVED

Third Report of the Gas Cylinders Research Committee (Alloy Steel Light Cylinders). Department of Scientific and Industrial Research. H.M. Stationery Office, Kingsway,

London, W.C.2. Price 2s. 6d. net.

The Price of Petrol. By E. H. Davenport. London
General Press, 8, Bouverie Street, London, E.C.4. Price 1s.

The Baghdad Air Mail. By Wing-Commander Roderic
Hill. Edward Arnold and Co., 41–43, Maddox Street, London,

W.1. Price 18s. net.

W.1. Price 18s. net.

Technical Report of the Aeronautical Research Committee,
1927-28. Vol. I. Aerodynamics (Model and Full Scale).

Price 15s. net. Vol. II. Stability and Control, Autogiros,
Materials, Engines, etc. Price £1 net. H.M. Stationery Office,
Kingsway, London, W.C.2.

Aeronautical Research Committee Reports and Memoranda:

No. 1720 14. 226. The Effect of Wind Weight and Atmos-

No. 1172 (Ae. 336) The Effect of Wind, Weight and Atmospheric Conditions (Including Semi-Tropical Conditions) on the Distance to Take-Off and Land an Aircraft. By Flight-Sergt. B. H. Rolles and H. L. Stevens, B.A. May, 1928. Price

9d. net. H.M. Stationery Office, Kingsway, London, W.C.2. Junkers' Birthday Album on the Occasion of Professor Junkers' 70th Birthday. Published by Verein Deutscher Ingenieure, Berlin, N.W.7.

Above the Bright Blue Sky: More About the War Birds.

By Elliott White Springs. John Hamilton, Ltd., 90, Newman Street, London, W.1. Price 7s. 6d.

Fourteenth Annual Report of the National Advisory Committee for Aeronautics, 1928. Administrative Report Without Technical Reports. U.S. National Advisory Committee for Aeronautics, Weshington D.C. U.S. Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Airblane Stress Analysis. By Alexander Klemin. The

Ronald Press Co., 15, East 26th Street, New York. Price

Aeronautical Research Committee Reports & Memoranda: No. 1189. (Ae. 351).—Notes on Longitudinal Stability at Stalling in Gliding Flight. By S. B. Gates, M.A. July, 1928. Price 6d. net. No. 1191 (Ae. 353).—Full-Scale Tests of a Standard Bristol Fighter Aeroplane Fitted with "Pilot Planes" at the Wing Tips. By W. G. Jennings, B.Sc. Sept., 1928. Price 6d. net. H.M. Stationery Office, Kingsway, London, W.C.2.

#### 365 鉴

#### NEW COMPANY REGISTERED

INLAND FLYING SERVICES, LTD.—Capital £2,500, in £1 shares. Acquiring certain property and assets belonging to A. B. Forsyth and R. M. B. Ward, proprietors of aerodromes, hangars, landing places, repairing and petrol-filling stations, garages, etc. Permanent directors: A. B. Forsyth, R. M. B. Ward.

巖 嶽 癌

#### AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor.

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

#### APPLIED FOR IN 1928

Published April 4, 1929 6,455. V. J. Burnelli. Aeroplanes. (307,620.)

Published April 11, 1929

F. Leonard. Aircraft. (308,003.)

Boulton & Paul, Ltd., J. D. North and V. J. Johnston. Beams or spars for aircraft, etc. (308,061.)

R. M. Wood. Aircraft. (308,098.)

A. Tammeo and E. Caminada. Aircraft. (293,706.)

R. A. A. Couzinet. Rudder bars for airplanes. (308,159.)

29,791.

#### FLIGHT.

The Aircraft Engineer and Airships

GREAT QUEEN STREET, KINGSWAY, W.C.2 Telephone: Holborn 3211.

Telegraphic address: Truditur, Westcent, London

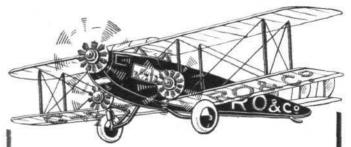
#### "FLIGHT" SUBSCRIPTION RATES

UNITED KINGDOM					ABROAD*					
3 6 12	Months,	Post F	s. Tree 7 15 30	d. 7 2 4	3 6 12	Months,	Post	Free .	s. 8 .16 .33	d. 3 6 0

\* Foreign subscriptions must be remitted in British currency.

Cheques and Post Office Orders should be made payable to the Proprietors of "Flight," 36, Great Queen Street, Kingsway, W.C.2, and crossed Westminster Bank.

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as



# Aeroplane parts & Accessories

FORKED JOINTS, TURNBUCKLES, EYEBOLTS, BRIGHT STEEL BOLTS AND NUTS AND SPECIAL PARTS TURNED FROM THE BAR. ALL A.G.S. PARTS KEPT IN STOCK.

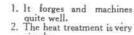




As used by Hinkler in his "Cirrus" Engine on Australian Flight.

The most efficient Valve Steel introduced

recent years.



2. The heat treatment is very simple.
3. It retains a high tensile value at high temperatures.
4. Withstands rigorous thermal changes without any detrimental effects.
5. It will not harden under any conditions and is

any conditions, and is therefore never brittle.
b. It is very tough at all temperatures and under all conditions.
lt resists erosion by exhaust gases to a remarkable degree.

#### KAYSER CO., LTD.

CARLISLE STEEL WORKS, SHEFFIELD.

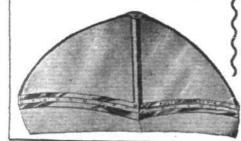
ESTABLISHED OVER 100 YEARS.

#### AUSTER TRIPLEX AERO SHIELD.

MODEL No. 4.

As fitted to D.H.50 Machines.

PROTECTED SIR ALAN COBHAM on his EPOCH MAKING FLIGHTS.



AUSTER FOOT PUMP.

Maximum Output. Minimum Effort. In 3 Models

Large Cars, No. 1, 42/6

Light Cars, No. 3, 35/-

Garage, No. 2,

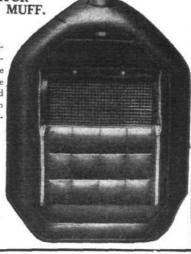


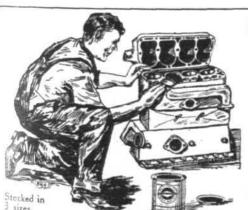
AS USED IN ALL "CIRRUS" ENGINES.

Contractors to British & Foreign Governments 126-128, New King's Road, Fulham, S.W.6.
Putney 5301 (5 lines).
BIRMINGHAM: Crown Works, Barford St.
'Phone: Midland 2123.
MANCHESTER: 306, Deansgate.

MOTOR RADIATOR

The Muff partly opened protecting the bottom of the Radiator and ensuring even temperature.





#### HERMETICOLL

Liquid Jointing

makes perfect joints and saves time and money.

MAKES HIGH PRESSURE JOINTS PERMANENTLY LEAK-PROOF.

Known as L'Hermetic in France, Belgium and all other

Full particulars from THE PATENT MOTOR PRODUCTS CO. on, W.C.1.
'Grams—"Patenmotor, London." 11, Store Street, Lond

Phone - Museum 1221.

countries.



SCIENTIFIC FLYING MODEL.

(Elastic motor).

Made by the LEADING MODEL FIRM of 21 years' reputation.

A. E. JONES LTD., 97, New Oxford Street, London, W.C.2.

MUSEUM 4090.

#### MISCELLANEOUS ADVERTISEMENTS. 18 WORDS or less, 3/-, then 2d. word.

STANLEY, POPPLEWELL & FRANCIS, International Patent Agents, Jessel Chambers, 88, Chancery Lane, London, W.C.2. Telephone: Holborn 6393; Telegrams: "Notions, London."

A. P. THURSTON, D.Sc., M.I.Mech.E., M.I.A.E., F.R.Ae.S.

PATENTS, Trade Marks and Designs.—Bank Chambers, 329, High Holborn, W.C.1 Holborn 2542.

AIR SURVEY.

THE AIRCRAFT OPERATING CO., LTD.,

8, New Square, Lincoln's Inn, London (Holborn
131), and Bulawayo, Southern Rhodesia; Cairo,

Egypt; Rio de Janeiro, South America. Contractors
to the Ordnance Survey. Laboratories and Subaidiary Company for aerial photography in the British

Isles, AEI OFILMS LTD., Colindale Avenue, Hendon.

Colindale 6581.)

A IR SURVEY CO., LTD., 39, Grosvenor Place, S.W.1 (-loane 6048), Monkey Point, Rangoon, and 12, Hungerford Street, Calcutta.

#### AVIATION INSURANCE.

FOR INSURANCES of Every Description connected with Aviation, apply to Bray, GIBB & Co., LTD., 166, Piccadilly, Lordon, W.1. Enquiries welcomed.

#### CONSULTANTS.

THE Design and Production of "Lighter-than-Air" craft is a speciality of THE AIRSHIP DEVELOPMENT Co., LTD., 39, Victoria Street, S.W.1, Aeronautical Engineers and Consultants. Telephone: Victoria 6521/2 (two lines).

#### SITUATIONS VACANT.

REQUIRED. Senior Draughtsmen and Section Leaders with first-class aircraft experience,—Write, giving experience, age, salary, etc., to HANDLEY PAGE, LTD., Cricklewood, N.W.2.

DRAWING OFFICE CLERK required, preferably with experience of Aircraft Materials and Specifications.—Apply by letter, giving age, experi-ence and salary required, to Handley Page, Ltd., Cricklewood, N.W.2.

R EQUIRED immediately, first -class Pilot-Instructor. C.F.S. category and at least 500 hours' flying essential. - Box No. 8199, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

A IRCRAFT Welders wanted immediately. Permanencies for at least 12 good men.—Apply, A. V. Roe & Co., Ltd., Briscoe Lane, Newton Heath, A. V. Roe & Manchester.

SENIOR and Junior Draughtsmen with first-class aircraft experience required.—Write, giving experience, age, salary, etc., to HANDLEY PAGE, LIMITED, Cricklewood, N.W.2.

EXPERIMENTAL Dept. Manager, Production Sound technical and practical experience at home and abroad. Highest Credentials.—Write, Box No. 1681, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

#### SITUATIONS WANTED.

ENGINEERING Draughtsman with Shop and Aircraft experience wants job with constant or occasional flying. Good Pilot, R.A.F.O. (1,000 hrs). Also marine experience. South Coast for preference. Box No. 1679, c/o Flight, 36, Great Queen Street, Kingsway, London, W.C.2.

#### EMPLOYMENT.

BE PREPARED for the coming great "BOOM" in Aviation, and Register at once. (Licensed annually by L.C.C.).—MERRIAM'S AVIATION BUREAU, 64, Victoria Street, S.W.1.

#### EAR DEFENDERS.

PREVENT injury due to excessive noise or change of pressure; small sounds heard as usual. Price, by post, 4/2 per pair.—The MALLOK-ARMSTRONG Co., 39, Victoria Street, S.W.I. (NEW ADDRESS).

MISCELLANEOUS.

A IRCRAFT REPAIRS. No job too small or too large. Complete reconditioning for C. of A. Full certificated staff—keenest rates.—BROOKLANDS SCHOOL OF FLYING, Brooklands, Byflet.

A ERO HIRE LTD., 39, Corporation Street, Birmingham. Tel.: Midland 4834. Tuition, Taxis; Short Flights, Photos, maintenance, etc., at Castle Bromwich.

WEAR an Aviation Badge or Brooch and Spread Your Enthusiasm. Obtainable through all Aero Clubs, Manufacturers, Mess Secretaries, etc., or 2/- each, post free, cash with order.—Aero Hire, Ltd., 39, Corporation Street, Birmingham.

#### ALAN COBHAM AVIATION Ltd.

150, New Bond Street, W.1.

'Phone Mayfair 2908. 'Grams: "Talsundar, London." Surveys conducted for Municipal authorities and commercial undertakings. In addition to choosing the best possible site, we prepare a layout and can contract for complete equipment.

AERODROME CONSULTANTS.

AIRCRAFT CAMERAS.

"EAGLE" Aircraft Cameras and Equipment Specialists in Air Photographic Apparatus. Full particulars from the manufacturers and patentees, WILLIAMSON MANUFACTURING Co., Ltd., Litchfield Gardens, Willesden Green, London, N.W.10. 'Phone: 0073-4 Willesden. 'Grams: "Kinetogram, Willroad, London." Contractors to the Admiralty, Air Ministry, War Office.

AIRCRAFT WANTED.

MODERN AIRCRAFT Purchased for Cash. Part
exchanges for new machines.—BROOKLANDS
SCHOOL OF FLYING, LTD. Telephone: Byfleet 437.

#### METAL PARTS.

EVERY description of Metal Fittings for all kinds of Aircraft. Plate, Tube and Turning. Accuracy guaranteed.—The Aytoun Engineering Works, Aytoun Road, Stockwell, London, S.W.

#### FOR SALE.

NEW Wire Ropes, Aeroplane Strands and Cords; half price.—The London Electric Firm, Croydon. Telephone: Purley 1222 & 1223 (2 lines).

Croydon. Telephone: Purley 1222 & 1223 (2 lines).

COLEY LTD. Aircraft Surplus. Special Offer:
9/9; Ogilvie Airspeeds, pressure head complete, new, 7/9; Smith's Indicators, 600-2,600 revs., 3-foot drive, 22/6; Radiator Thermometers, Cambridge or Foxboro', 10/6; Cross Levels, 1/6; Dashboard New Spot lamps, 2-volt, length of wire, 1/9; Leather Helmets, R.A.F. Pattern, new, 5/-. Above postage paid. Free List obtainable.—Coley Ltd., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames. 'Phone 0365.

#### CLOTHING.

Lewis's for flying equipment of Every Description. Leather Flying Coats, 87/6, 119/-, 120/-. Double Breasted, 65/-, 85/-, 106/-. New Flying Suits, all sizes, fitted fur collars, 60/-. Flying Helmets, best quality only, fur trimmed, 14/6. Flat or round type of phone, 5/-. Y-piece and Adapter, 3/3. Tubing and Rubber Connections, 3/-. Genuine Government Pilots' Gauntlets. Lambswool-lined Muffs, 12/6 per pair. Triplex Goggles of every description.—Lewis's, Leather Clothing Manufacturer, 19a & 27, Carburton Street, London, W.1. Museum 4793. No connection with any other firm.

mection with any other farm.

WAINWRIGHT'S FOR FLYING CLOTHING. Contractors to Colonial and Foreign Governments. All clothing guaranteed. As supplied to the leading flyers of the day. Write for our special catalogue. Genuine R.A.F. Sidcot Suits, 5 ft. to 5 ft. 9 ins. only, 57/6. Best quality Leather Flying Coats in all styles, 85/-, 105/-, 126/-. Waterproof Flying Coats, lined teddy fleece and oilskin, 60/-. R.A.F. Sheepskin Flying Boots, all sizes, 25/-. R.A.F. Pilot's Gauntlet Gloves, 12/6. Flying Mask Goggles, unsplinterable, lined fur, 12/6. Intercommunication Earphones, complete connections and "Y" pieces, 12/6. Flying Helmets, trimmed fur, 12/6.—Inspect the largest stock of leather clothing at Wainwright's, 300-302, Euston Road, London, N.W.1. 'Phone: Museum 6280.

Established over 30 years.
The Leading House for
AVIATORS' CLOTHING.

AVIATORS' CLOTHING.
Fine quality R.A.F. pattern Chrome Leather Coats, fleece lined, 105/-, 120/-. Other styles from 77/6.
Flying Suits fitted with fur collar, all sizes, 60/-, White Flying Suits, all sizes, 27/6. Mask Goggles, fur lined, 12/6. Featherweight Goggles fitted genuine Triplex, 7/6. Genuine R.A.F. Flying Gloves with lambs' wool pouch, 12/6. Flying Helmets, fur trimmed, 7/6, 10/6, 12/6, 14/6, Approved Air Ministry pattern Helmet, fits any head, best quality leather chamois lined, 19/6, 22/6. Genuine D.H. Phones, 12/6. Illustrated Catalogue Post Free.

All goods sent on approval against cash or C.O.D. Money refunded if not satisfied.

We make and sell at the keenest prices.

D. LEWIS,

(Dept. F), 124, Gt. Portland St.,
London, W. Phone: Museum 4314.
Branches at SHEFFIELD, BIRMINGHAM & LIVERPOOL.

AIR TAXIS.

A IR TAXIS, LTD., Stag Lane Aerodrome, Bdgware. Phone: Colindale 6307.

A EROFILMS LIMITED: Aerial Tours, Taxi Work, Aerial Photography, Air Survey. Colindale Avenue, Hendon, N.W.9. 'Phone: Colindale 6581 (2 lines).

FLIGHT TUITION.

LEARN TO FLY AT THE MIDLAND AERO
CLUB. Four tuition machines, two fully
qualified expert Instructors. No waiting.—Particulars, Hon. Secretary, 22, Villa Road,
Handsworth, Birmingham.

BROOKLANDS SCHOOL OF FLYING, LTD. Brooklands Aerodrome. 'Phone: Byfleet 437. Highest standard of instruction on "Moth" and Avro aircraft. Private accommodation on Aero-

THE DE HAVILLAND SCHOOL OF FLYING,
Stag Lane Aerodrome, Edgware, Middlesex.
Fourteen machines: Nine Moths, five advanced
training machines. Seven Pilot Instructors, Lecture
Classes, Restaurant and Recreation Pavilion. The
largest and most up-to-date civilian organisation
for flying tuition in the British Empire.

WHY PAY a year's subscription when you can learn in a month? Monthly subscription f.1 Is. No entrance fee. Cheapest tuition ever offered commences 1st April, 1929. No waiting list. Perfect aerodrome 65 miles from London. Comfortable Club Room and Bar. Moth machines. Annual Subscriptions Reduced to £3 3s. (Entrance Fee £1 1s.) "LEARN AT LYMPNE" with CINQUE PORTS FLYING CLUB.

READING — 40 Minutes from Paddington.—
PHILLIPS & Powis School of Flying opens
Easter Week. — 470, Oxford Road, Reading. Easter Wee Phone: 469.

SURREY FLYING SERVICES, Croydon Aero-drome (Telephone: Croydon 1736), have vacancies in their Flying School for Pupils at Moderate Rates. Avro Aircraft used. Residential accommodation at Aerodrome Hotel.

LEARN to fly Moths, Avians and Spartans quickly and cheaply. No waiting list.—Apply, Secretary, Hampshire Aeroplane Club, Hamble, Southampton.

TUITION.

WE offer sound instruction in Aeroplane Design, Fitting and Rigging, and Aero-Engine Fitting and Rigging; also expert training for Ground Engineers (Categories A, B, C and D) and Special Pilots (Licence B). Write to-day for our "Aeronautical Engineering" Booklet.—International Correspondence Schools, Ltd., 182, International Buildings, Kingsway, London, W.C.2.

MODELS AND PARTS.

A. E. JONES, LTD.

The Original House for Model Aeroplanes and Accessories; Quality always of the highest standard. Price List free.—97, New Oxford Street, London, W.C.1. Tel.: Museum 4090.

D.A.P. MODEL AEROPLANE CO. The Pioneer Firm for Models, Accessories and Materials. Scale Models a speciality. Catalogue 4d.—187, Replingham Road, Southfields, S.W.18. 'Phone: Putney 0636.

MODEL AEROPLANE BULLETIN, packed full M of illustrations. Free on application.— APPLEBY & Co., Jesmond, Newcastle-on-Tyne.

PLYING Models—over 50 types to choose from Send for list No. 15. 4d. post free.—WM. APPLEBY & Co., Jesmond, Newcastle-on-Tyne.

SOCIETY of Model Aeronautical Engineers, Hon. Sec., S. H. F. CROUCH, 23, Mayfair Avenue, Ilford, Essex. Flying — Wimbledon Common, April 13, May 11.

#### MACHINES & ENGINES FOR SALE.

A IRCRAFT FOR SALE. New and second-hand machines supplied for eash or on hire purchase. Exchanges arranged against aircraft or motor cars.—BROOKLANDS SCHOOL OF FLYING, Brooklands, Byfleet.

L E RHONE AVRO 3-seater, quickly convertible dual, condition new. C. of A. 11 months. Rock bottom price.—Sky Trips Ltd., 41, Baronsmere Road, East Finchley. 'Phone: Tudor 4103.

S E.5. A. VIPER. Perfect condition. Very fast. C. of A. Numerous spares. Total flying 44 hours. £220, or exchange for car.—HUNTER, 8, The Highlands, Edgware.

#### BULL'S RUBBER CO., LTD.

Dunlop, Michelin, Pirelli New or Second-hand.

SPECIAL CLEARANCE LINES.

Note Address,

3, Upper St. Martin's Lane, W.C.2. Gerrard 1347.



T'S OPEN. — You're safe! Your fall stops. You rest in mid air. And then relax.

You glide smoothly, easily groundward, sharing the long-proven confidence of certain safety that Erbin Air Chutes have bred all over the world, in the minds of men who fly—and sometimes jump.

Scores and scores know what a life saver this is, from their own wide experiences in the air.

Already more than 150 aviators have been saved by use of their **Erbin** Air

their Erbin Air Chutes when naught else could possibly have brought them safely down.

Among these are aviators in the Air Forces of Great Britain, Japan, Sweden, Denmark, Poland and the Argentine Republic, as well as scores in the United States

A number indeed have been saved in commercial operations.

Many of the emergencies were of the most extreme nature, and in every case the **Erbin** Air Chute functioned perfectly.

After thorough investigation and rigid comparative tests, many Governments have adopted the **Erbin** Air Chute as the standard life-saving equipment for their Air Forces.



If extreme emergency—all unannounced as it usually comes—suddenly confronts you in the air, will you, too, be ready to meet it with Erbin confidence?

### Irving Air Chute of Great Britain, Ltd.,

Works Road, Letchworth, Herts., England.

Telephone: Letchworth 370. Cable & Telegraphic Address:
"IRVIN, LETCHWORTH."

Profit by the enherical experience of Imperial actions of Junior

For more than two years Imperial Airways Ltd. maintained a regular service between Cairo and Basrah with 100°/o engine efficiency, with D.H. Hercules machines fitted with "Bristol" Jupiter engines.

On a basis of this experience, on the extension of the regular air service connecting London with India, the entire route from Genoa to Karachi is being maintained with aircraft fitted with "Bristol" Jupiters - Short-Calcutta-Jupiter flying boats from Genoa to Alexandria and De Havilland Hercules-Jupiter biplanes from Alexandria to Karachi.

The

# JUPITER RADIAL AIRCOOLED AERO ENGINE.

Designed and Manufactured by

THE BRISTOL AEROPLANE CO., LTD., FILTON

Telegrams: "AVIATION, BRISTOL."

Telephone: 3906 BRISTOL.